

JPRS-JST-93-010

10 MARCH 1993



FOREIGN
BROADCAST
INFORMATION
SERVICE

JPRS Report

Science & Technology

Japan

1992 AIST LABORATORY RESEARCH PLANS

JPRS-JST-93-010
10 MARCH 1993

SCIENCE & TECHNOLOGY
JAPAN

1992 AIST LABORATORY RESEARCH PLANS

93FE0225 Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF
INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 1-554

[Selected portions from the 1992 Agency of Industrial Science and Technology
laboratory research plans, Oct 92]

CONTENTS

Forward

[Shunzo Ishihara]..... 1

Table of Contents..... 3

Using 1992 AIST Laboratory Research Projects..... 7

Special Coordination Fund for Promotion of S&T..... 12

Other AIST Research-Related Policies..... 32

Administration of AIST Laboratory R&D Activities..... 42

Linking Together AIST Research Laboratories:
Research Promotion Councils..... 52

Ties to Research Organizations Outside Japan..... 73

Ties to Public Examination, Technology Centers (Kohsetsuhi)..... 132

On Industrial Property Rights..... 139

Forward

93FE0225A Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 p 3

[Text] This report outlines the 1992 Agency of Industrial Science and Technology (AIST) laboratory research plans and discusses R&D related support services. It is being published to help provide a deeper understanding of the role that AIST research laboratories play.

Of the 31 annual reports published to date since 1962, this report is said to provide the most comprehensive look at AIST research laboratories.

Looking back on 1991, we see one event after another affecting the framework of the international community from the breakup of the Soviet Union to the Persian Gulf War. 1991 was also a year which called into question the philosophy and principles upon which Japan participates as a member of the international community. As a result of various debates conducted in Japan over what role independent countries such as Japan should play in the international community, we believe a general consensus has emerged among the people of Japan that it should strive to return the fruits of its economic success and prosperity to the international community while continuing to master the tools that brought them that success.

In that context, the Agency of Science and Technology (AIST), as part of the Ministry of International Trade and Industry (MITI), will continue devoting itself in the coming year to the comprehensive growth of industrial science and technology in a way that spurs creativity and spread of science and technology at the international level. All sixteen AIST research laboratories, therefore, will focus their energies on basic research in order to spur the growth of leading-edge technologies such as new materials, bionics, biotechnology, electronics, and information technology that will form the foundation of future R&D. The AIST research laboratories will also be devoting more resources to hybrid and fusion type research which is growing in importance with each passing year.

In FY92, AIST also intends to bring together top researchers from inside and outside Japan with the aim of trying to create internationally known research centers called "centers of excellence." The centers will be central places where international exchange programs will be conducted. The emphasis at the

centers, therefore, will be on establishing sound research environments and developing various kinds of policies.

In more specific terms, AIST is planning or participating in various projects that foster international creativity and that promote research exchange in science and technology. This will include the opening of the Industrial Science and Technology Fusion Research Institute (tentative name) that will promote international research exchange programs and strengthen the role of the Tsukuba Research Center. It also involves taking the lead role in the Human Frontier Science Project, a joint international basic research project concerned with biofunctions. In addition to these, AIST will introduce some new research projects in FY92. These will include a large-scale industrial R&D project for developing atomic and molecular manipulation techniques, and a next-generation base technology R&D project on element technologies, i.e. superconductivity.

Future R&D in Japan should not only target sustained economic growth for Japan, but it should also be used for the international economy as a whole. AIST research laboratories, therefore, can be expected to play a much more central role in realizing that goal. The present environment surrounding AIST research laboratories is not a simple matter because the expectations around them are so high, but we believe we can still raise the level of research activities and improve research results.

Finally, we would like to thank each and everyone for their support, cooperation, and encouragement.

September 1992

Shunzo Ishihara,
Director-General
Agency of Industrial
Science and Technology

Table of Contents

93FE0225B Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 4-5

| | |
|---|---------------------|
| [Text] AIST Research Laboratory Research Projects (1992) | [Original page No.] |
| Using 1992 AIST Research Laboratory Research Projects..... | 6 |
| History of AIST Research Laboratories..... | 7 |
| 1992 AIST Organizational Structure..... | 8 |
| 1992 MITI Organizational Structure..... | 9 |
| Chapter 1 1992 AIST Research Laboratory Research Projects | |
| 1992 AIST Budgets by AIST Research Laboratory..... | 15 |
| I. Special Research and Ordinary Research..... | 23 |
| 1. Research Projects by AIST Research Laboratory..... | 25 |
| (1) National Research Laboratory of Metrology..... | 25 |
| (2) Mechanical Engineering Laboratory..... | 29 |
| (3) National Chemical Laboratory for Industry..... | 34 |
| (4) Government Industrial Research Institute, Osaka..... | 40 |
| (5) Government Industrial Research Institute, Nagoya..... | 44 |
| (6) Fermentation Research Institute..... | 48 |
| (7) Research Institute for Polymers and Textiles..... | 50 |
| (8) Geological Survey of Japan..... | 53 |
| (9) Electrotechnical Laboratory..... | 56 |
| (10) Industrial Products Research Institute..... | 61 |
| (11) National Research Institute for Environment and Resources..... | 63 |
| (12) Government Industrial Development Laboratory, Hokkaido..... | 70 |
| (13) Government Industrial Research Laboratory, Kyushu..... | 72 |
| (14) Government Industrial Research Laboratory, Shikoku..... | 74 |
| (15) Government Industrial Research Laboratory, Tohoku..... | 75 |
| (16) Government Industrial Research Laboratory, Chugoku..... | 76 |

| | |
|--|-----|
| 2. Complete Overview of Major Individual Research Projects..... | 77 |
| 3. Individual Major Research Projects Table..... | 78 |
| 4. Individual Major Research Projects Summary..... | 109 |
| (1) Measurements and Standardization..... | 111 |
| (2) Stability and Safety..... | 135 |
| (3) Seismology..... | 141 |
| (4) Natural Resources and Energy..... | 143 |
| (5) Marine Development | 157 |
| (6) Domestic Sciences..... | 161 |
| (7) Biotechnology..... | 167 |
| (8) Bionics..... | 179 |
| (9) New Materials | 189 |
| (10) Polymer Engineering | 233 |
| (11) Reaction and Isolation Techniques..... | 241 |
| (12) System Engineering Applications..... | 249 |
| (13) Electronics..... | 257 |
| (14) Space Development..... | 269 |
| (15) Information..... | 275 |
| (16) Industrial Base..... | 285 |
| (17) Frontier Research..... | 301 |
| (18) Specific International Joint Research Activities..... | 305 |
| (19) Mine Safety | 311 |
| (20) Small-to-Medium Business Protection Measures..... | 313 |
| (21) Peaceful Atomic Energy Utilization | 319 |
| (22) Pollution Prevention | 335 |
| (23) International Trade and Industry Technology Activities..... | 361 |
| (24) Research Cooperation Projects..... | 377 |
| II. Designated Research..... | 379 |
| 1. Large-Scale Industrial Technologies R&D (Large-Scale Project)..... | 381 |
| 2. New Energy Technologies R&D (Sunshine Project)..... | 390 |
| 3. Energy Conservation Technologies R&D (Moonlight Project)..... | 402 |
| 4. Medical and Welfare Equipment Technologies R&D..... | 410 |
| 5. Next-Generation Industrial Base Technologies R&D..... | 414 |
| 6. Key Regional Technologies R&D Program..... (includes regional technical exchange research) | 422 |
| 7. Biofunction Application Technologies..... | 427 |
| 8. Global Environmental Technologies R&D..... | 436 |

| | |
|---|-----|
| III. Other AIST Research Projects..... | 439 |
| 1. Special Coordination Fund for Promoting Science/Technology..... | 441 |
| 2. Other Laboratory-Related AIST Policies..... | 454 |
| Chapter 2 Operation of AIST Research Laboratories | |
| I. Administration of AIST Research Laboratory R&D Activities..... | 461 |
| II. Ties Between AIST Research Laboratories..... | 469 |
| III. Ties to Outside Research Institutes..... | 475 |
| 1. Mobile Researcher Program..... | 477 |
| 2. Joint Research..... | 477 |
| 3. Public-Private Sector Joint Research..... | 506 |
| 4. Commissioned Research..... | 509 |
| 5. Research Support..... (Regulation Governing Inventions Made With AIST Assistance) | 513 |
| 6. Regulations Governing AIST Testing, Analysis, and Equipment..... | 516 |
| 7. Regulations Governing Loaning of AIST Machinery and Tools..... | 520 |
| IV. Ties to Public Examination and Technology Centers..... | 523 |
| 1. Industrial Science and Technology Liaison Committees..... | 525 |
| 2. Public Examination and Technology Centers..... | 528 |
| 3. Technical Training Programs..... | 538 |
| V. On Industrial Property Rights..... | 539 |
| 1. Ways to Use Industrial Property Rights..... | 542 |
| 2. Licensing Industrial Property Rights..... | 554 |
| Chapter 3 AIST Research Laboratories | |
| I. Overview of AIST Research Laboratories..... | 557 |
| II. List of AIST Research Laboratory Researchers..... | 595 |
| 1. National Research Laboratory of Metrology..... | 597 |
| 2. Mechanical Engineering Laboratory..... | 599 |

| | | |
|---|---|-----|
| 3. | National Chemical Laboratory for Industry..... | 603 |
| 4. | Government Industrial Research Institute, Osaka..... | 607 |
| 5. | Government Industrial Research Institute, Nagoya..... | 611 |
| 6. | Fermentation Research Institute..... | 614 |
| 7. | Research Institute for Polymers and Textiles..... | 616 |
| 8. | Geological Survey of Japan..... | 618 |
| 9. | Electrotechnical Laboratory..... | 622 |
| 10. | Industrial Products Research Institute..... | 632 |
| 11. | Research Institute for Environment & Natural Resources..... | 634 |
| 12. | Government Industrial Development Laboratory, Hokkaido..... | 638 |
| 13. | Government Industrial Research Laboratory, Kyushu..... | 640 |
| 14. | Government Industrial Research Laboratory, Shikoku..... | 642 |
| 15. | Government Industrial Research Laboratory, Tohoku..... | 643 |
| 16. | Government Industrial Research Laboratory, Chugoku..... | 644 |
| III. Local Information on AIST Research Laboratories..... | | 645 |

Using 1992 AIST Laboratory Research Projects

93FE0225C Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 6-7

[Text] AIST Research Laboratories

There are 16 research laboratories affiliated with the Agency of Science and Technology. These are the National Research Laboratory of Metrology (NRLM), the Mechanical Engineering Laboratory (MEL), the National Chemical Laboratory for Industry (NCLI), the Fermentation Research Institute (FRI), the Research Institute for Polymers and Textiles (RIPT), the Geological Survey of Japan (GSJ), the Electrotechnical Laboratory (ETL), the Industrial Products Research Institute (IPRI), the Research Institute for Environment and Natural Resources, the Government Industrial Development Laboratory, Hokkaido (GIDLH), the Government Industrial Research Institute, Tohoku (GIRI, Tohoku), the Government Industrial Research Institute, Nagoya (GIRI, Nagoya), the Government Industrial Research Institute, Osaka (GIRI, Osaka), the Government Industrial Research Institute, Chugoku (GIRI, Chugoku), the Government Industrial Research Institute, Shikoku (GIRI, Shikoku), and the Government Industrial Research Institute, Kyushu (GIRI, Kyushu). Chapter 1 of this book lists the research projects for 1992 for all 16 research laboratories; Chapter 2 discusses the operation of the laboratories; and Chapter 3 presents an overview of each laboratory.

In 1978, the nine research laboratories listed above between the National Research Laboratory of Metrology and the National Research Institute for Environment and Resources moved their operations to the Tsukuba Research Center in Ibaraki Prefecture to form the core group of AIST research operations.

With the aim of raising the technological level of mining and manufacturing industries in Japan and creating advanced technologies, these 16 research laboratories employ approximately 2,500 researchers who conduct experimental research based on close ties with other research institutes, universities, administrative bodies, and industry.

With a total 1992 budget of ¥50 billion and full-time staffs totalling 3,592 people, these 16 laboratories make up approximately one-fourth of the national

research institutes in Japan. In terms of results, as of March 1992, these laboratories boast ownership of 9,682 industrial property rights, e.g. patents.

Chapter 1

The experimental research being done at AIST research laboratories can be divided into two major groups. The first group consists of R&D topics that the laboratories themselves choose, and the second group are R&D topics originating from the outside. The research in the first group is paid for with funding from the AIST budget for basic research and consists of ordinary research (administrative development, large-scale targeted programs), and special research.

At present, ordinary research has risen to more than 640 research topics. Special research, on the other hand, spans 25 major areas including new materials, bionics, electronics, and seismology, and has risen to over 260 research topics. The research being done in the first group is funded from budgets of other bureaus and agencies. This includes mine safety research funded by the Agency of Natural Resources and Technology, small-to-medium-size business protection research funded by the Small and Medium Enterprises Agency, peaceful nuclear energy utilization research funded by the Science and Technology Agency, pollution prevention research funded by the Environmental Agency, international industrial technology research funded by the ITIT and Industrial Policy Bureau, and research cooperation projects research funded by the Industrial Policy Bureau. The second group of research projects are also categorized into those funded by AIST and those funded by other agencies and bureaus. The former include a national research and development on industrial science and technology (the Large-Scale Project), new energy technologies (the Sunshine Project), energy conservation technologies (the Moonlight Project), medical and welfare equipment technologies, next-generation industrial base technologies, key regional technologies, bio-function application technologies, and global environment technologies. The latter includes research based on a special coordination fund for promoting science and technology given by the Science and Technology Agency.

The ordinary research and specific research topics for each laboratory are found on pages 25-76 and the major research categories are found on pages 77-107. A compendium of each major ordinary and specific research projects is listed starting on page 111.

Chapter 2

The research conducted by AIST research laboratories is administered in accordance with the AIST Research Laboratory Administration Guidelines. Please refer to pages 463-468.

AIST seeks to establish closer relations between each of the AIST research laboratories through the use of research promotion councils that coordinate related experimental research activities. These councils effectively contribute to the dissemination of key research to each of the AIST research

laboratories. At the present time, there are eight research promotion councils consigned to polymers, inorganic compounds, analysis and measurement, bionics, industrial pollution, biotechnology, mechatronics, and resources. Please refer to pages 471~473.

The Mobile Researcher Program is a researcher exchange program that actively invites researchers from outside laboratories and sends its own researchers to affiliated laboratories. This program contributes to the improvement and dissemination of research results. Please refer to page 477.

AIST also promotes joint research programs with universities and private industry, as well as research commissioned by private companies.

Please refer to pages 478~488 for regulations governing joint research and pages 509~512 for regulations governing commissioned research.

AIST also provides technical advice and support services to corporations. Please refer to page 513.

Companies may also use testing and analysis equipment belonging to AIST research laboratories. For more details on those regulations, please refer to pages 516~519. Please see pages 520~522 for information about borrowing laboratory equipment and tools.

In order to foster more exchange between AIST research laboratories and public examination and technology centers, AIST has established industrial science and technology liaison committees. With the cooperation of the Agency of Small and Medium Enterprises and local MITI offices, AIST uses the committees to support regional technology R&D by taking maximum advantage of the R&D power of AIST research laboratories. At the current time, there are eight joint subcommittees categorized by field of research and eight regional industrial science and technology liaison committees. Please refer to pages 525~538 for details.

As of 31 March 1992, the number of industrial property rights, under the jurisdiction of the AIST director-general, obtained from the above activities (AIST patents, utility models, and designs) amounted to 9,682 property rights (8,226 domestic; 1,456 foreign) and 7,905 cases pending (7,105 domestic; 890 foreign). The revenue from licensing 622 of those property rights to 790 companies during 1991 totalled ¥198.67 million. For those parties wishing to license industrial property rights owned by the AIST director-general, please refer to pages 541~554, or contact the Japan Industrial Technology Association on the 5th floor of the Toranomon Ichome Mori Building at 1-19-5 Toranomon, Minato, Tokyo (Tel. 03-3591-6272).

History of AIST Research Laboratories

Aug 1948 The Agency of Industrial Science and Technology is established as an administrative and comprehensive technical research organization for the mining and manufacturing industry. It was achieved by integrating the laboratory research institutes affiliated with the Ministry of Commerce and Industry as its external bureaus, transferring the Electric Laboratory from the Ministry of Communications (excludes communication part), and integrating these with the Standards Department from the Patent Standards Bureau.

Jul 1949 The Kyushu Mining Safety and Research Laboratory and the Hokkaido Mining Safety and Research Laboratory were integrated to form the Safety and Safety Research Institute.

Jan 1951 Heating administration duties transferred from the Agency of Natural Resources to AIST.

Apr 1952 The Government Mechanical Laboratory, both Nagoya offices of the Industrial Laboratory of Tokyo, and the Ceramics Research Laboratory were integrated to form the Government Industrial Research Institute, Nagoya. In addition, the Fuel Research Institute and Mining Technology Institute were integrated to form the Resources Research Institute.

Aug 1952 Reorganization makes AIST an affiliate organization of MITI.

Apr 1960 Government Industrial Development Laboratory, Hokkaido established.

Apr 1962 Reorganization puts AIST in charge of managing technology affairs in MITI.

Jul 1964 Government Industrial Research Laboratory, Kyushu established.

Nov 1966 Large-Scale Project (national R&D program) launched.

Jul 1967 Government Industrial Research Laboratory, Shikoku, and Government Industrial Research Laboratory, Tohoku established.

Jul 1969 Alcohol Research Institute renamed Fermentation Research Institute; Textile Research Institute renamed Research Institute for Polymers and Textiles; Industrial Arts Institute renamed Industrial Products Research Institute.

Jul 1970 Electric Laboratory renamed Electrotechnical Laboratory; Resources Research Institute renamed National Research Institute for Pollution and Resources.

[Continued]

Apr 1971 Government Mechanical Laboratory renamed Mechanical engineering Laboratory.

Jul 1971 Government Industrial Research Laboratory, Chugoku established.

Jul 1973 Reorganization leads to abolishment of Science and Technology Council (affiliate organization of AIST) and establishment of Industrial Technology Council as affiliate organization of MITI.

Jul 1974 Sunshine Project launched (new energy technology R&D project).

Jul 1975 Heating administration duties transferred from AIST to Agency of Natural Resources and Energy.

Oct 1978 Moonlight Project launched (energy conservation technologies R&D project).

Sep 1979 Industrial Laboratory of Tokyo renamed National Chemical Laboratory for Industry.

Sep 1979–
Mar 1980 Nine laboratories in Tokyo area relocated to Tsukuba Research Center.

Apr 1981 Basic technologies R&D project launched for next-generation industries.

Dec 1981 Second Tsukuba research center completed.

Apr 1982 Key regional technologies R&D program launched.

Apr 1984 Regional technologies exchange program launched.

Apr 1985 Basic Technology Research Facilitation Law enacted.

Nov 1986 Research Exchange Promotion Law enacted.

Apr 1988 Industrial technologies R&D program launched for biofunction applications.

Oct 1988 Law concerning consolidation of R&D programs for industrial technologies enacted.

Oct 1991 National Research Institute for Pollution and Resources reorganized; renamed Research Institute for Natural Resources and Environment.

Special Coordination Fund for Promotion of S&T

93FE0225D Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 441-453

[Text] Basic Policies Concerning Special Coordination Fund for Promotion of Science and Technology

9 March 1981

Revised 27 November 1984

Science and Technology Council

1. In order to overcome the many limitations that Japan faces as a result of size and scarcity of resources, it is essential that Japan focus the superb work ethic and intellect of its people and create a science and technology based country.
2. Japan reached its current technological level by actively importing and assimilating science and technology from the United States and Europe. In the future, however, Japan will not be able to rely any longer on imported technologies if the global technological revolution stagnates and international opinion runs against the importation of technology by Japan.

In addition, as one of the advanced countries in the world, Japan is still expected to make significant contributions to solving the science and technology problems that confront advanced human society.

3. To deal with such circumstances, Japan must focus all its energy in the future to the promotion of science and technology using its own creativity to develop technologies. One specific measure taken was to create a special coordination fund that is used to provide overall coordination of important research projects that promote science and technology over the long term and are consistent with the policies of the Science and Technology Council.

In November 1984, the Science and Technology Council issued a revision to its comprehensive basic policies for long-term promotion of science and technology in which it concluded that the purpose of the coordination fund should be to outline R&D growth and promote R&D programs that

meet the long-term national and community needs of Japan. It also concluded that Japan should consider the following as fundamental activities for making the most effective use of this coordination fund.

(1) Promotion of basic and leading-edge research

The fund will be used for promoting leading-edge and basic research, i.e identifying seeds of revolutionary technologies, in order that Japan might develop its own original technologies in a comprehensive and direct manner.

(2) Promotion of R&D requiring cooperation of many organizations

The fund will be used for promoting R&D requiring cooperation between various organizations.

(3) Consolidation of organic links between industry, government, and academia

In view of the growing degree of sophistication and complexity of R&D, the fund will be used to consolidate the organic links between industry, government, and academia based on their unique roles in order that Japan might more efficiently promote R&D on its own technologies.

(4) Promotion of international R&D

The fund will be used for effectively promoting R&D and joint international research that require significant international cooperation and have to be handled in a dynamic and flexible manner.

(5) Flexible emergency research

The fund will be used for promoting dynamic R&D that can respond to natural disasters and deal with new or changing situations and circumstances.

(6) Research evaluation, and R&D surveys and analyses

The fund will be used for perfecting an evaluation system that will effectively and comprehensively support pre- and post-evaluation of research subjects. It will also be used for doing comprehensive surveys and analysis on R&D activities that fit the "needs" of future research.

4. Important points

The following areas have been given special attention for making the most effective use of the special coordination fund.

- (1) In terms of science and technology policies, full consideration will be given to their relation with the policies of other ministries and agencies in view of the fact that related ministries and agencies are promoting these similar policies, but under their own jurisdiction.
- (2) In terms of specific uses of the coordination fund, prior consideration will be given to the opinions of related ministries, agencies, and related organizations.
- (3) In terms of research subjects, consideration will be given on a priority basis to those subjects that meet the original intent of the coordination fund, and make effective use of the fund by allocating funds according to an appropriate research evaluation.
- (4) Consideration will also be given to the vitality of a company and whether or not it involves researchers affiliated with universities and respects their academic freedom in doing research. An effort will be made to utilize the full potential of national public examination and technology centers.
- (5) AIST will try to expedite the processing time for applications and so forth from the view of assuring smooth implementation of research based on this special coordination fund.

(Reference)

1991 Special Coordination Fund for Promotion of Science and Technology: Total Budget — ¥10.5 billion (1992 estimated budget — ¥11.0 billion)

1991 Research Projects Funded by Special Coordination Fund for Promotion of Science and Technology

I. General Research

1. Fundamental leading-edge science and technology

(1) Substances and materials important to science and technology

(New research)

- Research on a basic technology for quantitative, intelligent, non-destructive evaluation of materials and structures requiring high reliability

(Continuing research)

- Basic technology research on identifying new functions based on high purity rare metals
- Basic technology research for developing materials with gradient function for easing thermal stress
- Research on measuring, evaluating, and controlling element functions in microscopic areas of substances and materials
- Research on constructing data base for use in R&D on superconductive materials
- Basic research on ways to use host/guest reactions for creating new functional materials
- Basic technology research for material interconnections by fabricating an ideal surface
- International joint research on ways to test and evaluate new materials

(Second phase research)

- Developmental research on generating, measuring, and utilizing super high vacuums
- Developmental research on generating and utilizing vacuum ultraviolet light

(2) Life Sciences

(New research)

- Research on development of human gene mapping system
- Basic technology R&D on elucidating the structure and function of sugar chains
- Basic technology R&D on new plant experiments

(Continuing research)

- Basic technology for utilizing bioenergy conversion function
- Basic technology R&D on elucidation of immunity response mechanism
- Research on developing analysis and control methods for bio-information transmission mechanism
- Basic technology research on development of new plant experiment systems

- Basic technology research for elucidating infiltration and metastasis mechanism of cancer cells

(Second phase research)

- Developmental research on generative engineering technology
- Developmental research on high-sensitivity, high-resolution, non-destructive method for measuring living organisms at the molecular level

(3) Earth science and technology fields

(Continuing research)

- International joint research on atmospheric, oceanic, and climatic fluctuations in the Pacific Ocean
- International joint research for elucidating desertification mechanism
- Research on elucidation of ocean plate formation regions (lift system) in the South Pacific
- International joint research for establishing comprehensive observation system and elucidating general ocean circulations
- International joint research on interaction of atmosphere, hydrosphere, and biosphere at the North Pole

(4) Other fundamental leading science and technology fields

(New research)

- Basic technology R&D on sensor fusion
- Research on building self-organizing data-base system to assist creativity in R&D

(Continuing research)

- Research on fuzzy-logic system and application in human and natural systems
- International research on elucidating physical, chemical, and biological phenomena in microgravity environments

(2) Research having strong national and societal needs

(New research)

- General research on creation of advanced earthquake prediction methods for the Tokyo metropolitan area
- Research on inland earthquake prediction method for magnitude 7 earthquakes
- International joint research for developing landslide forecast methods for volcanically active areas

(Second phase research)

- Advanced research for dealing with snowfall accumulations

II. Basic Human Research

(1) Interministerial R&D

- Fundamental research on forming international and interministerial research groups centered around research leaders at national research laboratories

(New research)

- Research on new internal defense substances to combat active oxygen
- Research on elucidating mechanism of high carbon coordination number
- Research on analyzing and evaluating effects of intensive cancer treatments
- Biochemical research on new physiologically active factors contributing to circulation regulation mechanism
- Research on elucidating structure and function of hormone bonding proteins by developing high-sensitivity analysis techniques
- Research on elucidating structure and information processing mechanism of the brain/nervous systems in invertebrates
- Research on ways to measure and evaluate thermal properties of advanced film and fiber materials
- Research on magneto-optical effects of non-equilibrium substances

(Continuing research)

- Research on how matter circulates between plants and the atmosphere in a closed environment
- Research on creating and uncovering functions in artificial metallic tissues that have fine-ordered structures
- Basic research on method for measuring absolute free-radical concentrations in the atmosphere
- Developmental research on method for preventing specialized neurons from dying
- Elucidation of macromolecular substances in living organisms and development of functional materials
- Molecular research on sugar chain recognition mechanism in protein
- Research on optical arithmetic operation methods
- Research on ultra-high resolution spectral analysis methods using lasers
- Basic research on using PET to analyze information transmission mechanisms inside the brain
- Research on electromagnetic radiation as warning signal for destruction of earth's crust
- Development and application of high-precision measurement technique for comparing the abundant and relative quantities of chemical elements inside microscopic specimens
- Research on development of system that introduce genes to specific loci

- Elucidation of specialized regulating mechanism and species specific properties associated with creation of animal immune systems
- Elucidation of RNA high-order structures and functions, and applied research on synthetic ribozymes
- Research on functional materials with high biological compatibility
- Research on mechanism whereby substances migrate in free surfaces

(2) Regional Research on Fluids

- Research on forming research groups at local government, industrial, and academic research organizations centered around regional core organizers

(New research)

- Research on advanced method for observing Lake Biwa lake and marsh environments and improving water quality (Shiga Prefecture)
- Basic research on creation of intelligent inorganic compounds and organic composite materials
- Elucidation of drought-resistant function in plants and applied research on desert greening

(Continuing research)

- Measuring biological radicals and applications thereof
- General research on specially structured ceramics made by colloid processing (Fukuoka Prefecture)
- Research on elucidation of mangrove-based ecosystems

III. Key International Joint Research Projects

- International joint research at individual research laboratories based on science and technology cooperation agreements

IV. Key Fundamental Research

- Basic research at national research laboratories for creating "seeds" for new revolutionary technologies

V. Surveys and Analyses

1. Fundamental surveys on drafting science and technology policies
- Survey on direction of growth of science and technology

(New surveys)

- Survey on interdisciplinary research in natural sciences, and human and social sciences

(Continuing surveys)

- Survey on globalization of advanced science and technology fields (science and technology forum)
- Survey on direction and growth of technology in Japan
- Survey on direction and growth of leading merged research areas in Japan
- Survey on promotion of international science and technology activities

(New surveys)

- Survey of U.S. research institute activities from the view of technology transfers to developing countries
- Survey of policies promoting research cooperation and technology transfers in the urban and housing areas to developing countries
- Survey on consolidating base for promoting science and technology

(New surveys)

- Survey of policies promoting joint use of research equipment and facilities at national research laboratories

(Continuing surveys)

- Comparison survey between Japan, the United States, and Europe on community awareness of science and technology

2. Surveys on selecting general research subjects

(New surveys)

- Survey on creation of intelligent materials where revolutionary electronic and crystal structure control technology is used
- Survey on creation and use of intelligent materials that imitate biological functions
- Survey of formation and use of microbeams for making measurements
- Survey on creation of materials in a microgravity environment or imitation microgravity environments for short periods of time
- Survey of basic technologies for developing intelligent human interfaces that assist creativity
- Survey of scientific software technology for qualitative improvement of intelligent production systems
- Survey on elucidating dynamism of biomolecular nanostructures and developing applications thereof
- Survey of methods for elucidating the cause of brain inflammation and brain fever
- Survey on advanced methods of using remote sensing data for observing the earth's environment
- Survey on carbon dioxide fixing from geochemical perspective
- Survey on marine substance circulation research

VI. Emergency Research During Fiscal Year

Responding to emergency situations that occur during fiscal year (includes emergency commissioned research)

Research Projects With AIST Participation

| Research | Term | Particulars |
|---|--------------------|--|
| I. General Research 1. Promotion of fundamental leading science and technology <science and technology substances and materials> (1) Research on basic technology for quantitative, intelligent, non-destructive evaluation method for materials and structures requiring high reliability | 3 - 5 (phase I) | In order to perfect a basic technology for quantitative, intelligent, non-destructive methods for evaluating materials and structures requiring high reliability, this research will focus on (1) quantitative, ultrasonic non-destructive measurement methods, (2) mathematical models based on elastic wave theories, (3) applied artificial intelligence, and (4) development of prototype system for common board technology. |
| (2) Basic research on using host/guest reactions to create new functional materials | 2 - 4 (phase I) | In order to create materials with the same structure and shape but with completely different compositions, or materials with the same composition but with completely different shapes and structures, and perfect a basic technology for creating new functional materials and substances, this research will focus on creating materials based on a (1) composition conversion technology, and (2) composition-structure conversion technology using ion exchange host-guest reactions. |
| (3) Basic technology research on material interconnections by fabricating an ideal surface | 2 - 4 (phase I) | In order to develop processes for obtaining solid interfaces with a targeted structure and functions by synthesizing a fabrication and evaluation technology for surfaces and interfaces controlled at the atomic level, this research will focus on (1) developing theories and evaluating ideal surfaces and interfaces, and (2) creating interfaces by means of ideal surface control. |
| (4) Research on measuring, evaluating, controlling element functions in microscopic areas in substances and materials | 0 - 3 (phase I) | With a lot of attention focused on methods for directly evaluating the function of materials and substances themselves in very small microscopic areas, this research will focus on measuring and evaluating (1) surface element functions, (2) particulate and interface element functions, and (3) quantum size functions. The aim will be to develop a new method for measuring and evaluating element functions in very small microscopic areas while trying to improve advanced electronic, ion, and optical methods. |
| (5) Research on building data base for use in R&D on superconductive materials | 0 - 3 (phase I) | It is a matter of great urgency to effectively and efficiently perfect a unified technology for evaluating superconductivity properties and quickly relay that data to parties inside and outside Japan, so the purpose of this research will be to (1) standardize an evaluation and measurement technology for all the properties in superconductive materials, and (2) develop a prototype data base. |

| Research | Term | Particulars |
|--|---------------------|--|
| (6) Research on basic technology for discovering new functions in highly pure rare metals | 2 - 3 (phase II) | Rare metals have gained notoriety of late due to their diverse functions, so a search has begun on finding new functions that might see use in advanced science and technology fields such as electronics, therefore, this research will focus on (1) uncovering new functions (2) perfecting a purity evaluation method, (3) creating and evaluating standard reference materials and presenting specimens, and (4) standardizing data bases. |
| (7) Basic technology research on development of materials with gradient function for easing thermal stress | 2 - 3 (phase II) | In order to perfect a basic technology for developing functional gradient materials that are expected to be used as superconducting materials in advanced science and technology fields such as aerospace and nuclear fusion, this research will focus on (1) material design, (2) structural control, and (3) property evaluation. |
| (8) Developmental research for generating, measuring, and utilizing super high vacuums | 3 - 4 (phase II) | In order to perfect a technology for generating, measuring, and utilizing super-high vacuums, which will be indispensable in the development of future materials used in science and technology fields, i.e. superlattices, this research will concentrate on (1) fabricating an advanced super-high vacuum pump and vacuum materials, (2) fabricating an advanced cold-cathode vacuum gauge and laser-beam excitation vacuum gauge, and (3) fabricating and applying an advanced drive mechanism and advanced surface properties. |
| (9) Research on technology for generating and utilizing vacuum ultraviolet light | 3 - 4 (phase II) | Vacuum ultraviolet light (wavelength: 2-200nm) is expected to form the foundation for raising the technological level of many science and technology fields, i.e substances and materials, information and electronics, and life sciences. In that context, this joint research project will focus on (1) developing a technology for generating vacuum ultraviolet light, (2) developing optical elements, and (3) developing a basic technology for utilizing vacuum ultraviolet light. |
| <Life Sciences> (1) Basic technology research for elucidating the structure and function of sugar chains | 3 - 5 (phase I) | With the aim of developing a common basic technology for elucidating the biosynthesizing function and function manifestation mechanism of sugar chains, this research will focus on the (1) development of a technology for analyzing sugar chain functions that is linked to genetic engineering, (2) development of a technology for reconfiguring, recombining, and modifying sugar chains, and (3) development of structural analysis technology for complex sugar chains. |
| (2) Basic technology research on utilization of bioenergy conversion functions | 0 - 3 (phase II) | In order to further expand the range of application for high-efficiency, extremely fine bioenergy conversion functions, an effort will be made to develop (1) a high-efficiency optical data processing methods based on visual models, (2) a high-efficiency production and advanced method for utilizing ATP (adenosine triphosphate), and (3) a bioenergy conversion device modeled after the bio-actuator mechanism. |

| Research | Term | Particulars |
|--|--------------------|--|
| (3) Research for developing analysis and control technology for bio-information transmission mechanism | 0 - 3 (phase I) | In order to elucidate the bio-information transmission mechanism in the nervous, immune, and endocrine systems and clarify control possibilities, this research will focus on (1) the regulating mechanism of the nervous and endocrine systems that is based on information transmission substances in the immune system, the regulating mechanism of the immune system that is based on information transmission substances in the nervous and endocrine systems, and the central nervous system mechanism that regulates the immune system, and (2) controlling the information transmission mechanism in the nervous, immune, and endocrine systems by means of physical and chemical stimulation. |
| (4) Basic technology R&D for developing new plant experiments | 2 - 4 (phase I) | In order to systematically elucidate plant functions and create an applied technology base, this research will focus on developing new experiments whose aim will be to (1) elucidate generation and specialization mechanisms, (2) elucidate environmental response mechanisms, and (3) elucidate genes and genomes. |
| (5) Basic technology R&D for elucidating infiltration and metastasis mechanism of cancer cells | 2 - 4 (phase I) | With the aim of developing a basic technology for elucidating the infiltration, metastasis, and secondary tumor formation mechanisms of cancer cells, this research will focus on how to analyze the (1) infiltration mechanism of cancer cells, (2) metastasis mechanism of cancer cells, and (3) formation mechanism of secondary tumors, and try to come up with basic knowledge and a technology for effectively controlling those processes. |
| (6) Developmental research on high-sensitivity, high-resolution, non-destructive methods for measuring living organisms at the molecular level | 3 - 5 (phase I) | In order to develop a basic technology for making non-destructive measurements of highly-developed life activities in biological tissues and substances at the molecular level, this research will involve itself with (1) developing a real-time measurement method based on optical science and technology, and (2) creating a more advanced NMR technology using stable isotopes. |
| <Other Basic/Advanced Science and Technology> (1) Basic technology R&D on sensor fusion | 3 - 5 (phase I) | In order to perfect sensor fusion (integration and merger of information from multiple sensors), which is indispensable in the automation and technical advancement of various equipment such as intelligent robots and medical equipment, and apply its basic structure, this research will focus on (1) basic structure of sensor fusion, (2) sensor fusion engineering, and (3) basic medicine tracing technology, which is a typical use of sensor fusion. |
| (2) Research on building self-organizing data-bases to assist R&D creativity | 3 - 5 (phase I) | In order to create an information system with highly developed human interfaces that enable multi-variable indeterminate information to be stored, managed, referenced, and presented in an innovative visual manner to researchers, and a system operation that does not become a burden to the researcher, this research will concentrate on (1) information resourcing formats, (2) basic self-organizing data base systems, and (3) advanced data base applications. |
| (3) Research on fuzzy-logic system and application in human and natural systems | 0 - 3 (phase I) | This research will have great benefits for human society and industry. It has to do with "fuzzy" logic system applications that are able to deal quantitatively with previously unquantifiable ambiguous information originating primarily from human beings. |

| Research | Term | Particulars |
|--|---------------------|--|
| 2. Research with strong national and social needs | 3 - 5 (phase I) | A surveys will be conducted on fine subterranean structures in order to elucidate seismological characteristics in the Tokyo metropolitan area for which there is now some degree of urgency, and to develop observation techniques that will be effective in making predictions. This survey will involve (1) research of subterranean structures in the Tokyo metropolitan area, and (2) research of seismological characteristics based on models of the Tokyo metropolitan area. |
| (1) General research on creating advanced earthquake prediction techniques for Tokyo metropolitan area | 3 - 4 (phase II) | In order to elucidate the phenomenon of snowfall accumulation and improve the living environments of people in snowfall regions, this research will concern itself with (1) elucidating snowfall mechanism based on the latest observation techniques and studying the possibility of regulating snowfalls, and (2) developing snow treatment methods using ground heat and snow removal methods using snow transport pipelines. |
| (2) Advanced research for dealing with snowfall accumulations | 2 - 3 (phase II) | In order to promote the development of an inland earthquake prediction methods for hard to predict magnitude 7 (M7) earthquakes in light of the possibility of severe damage, this research will use the northwest region of the Sagami trough as a test field and will focus on (1) conducting an accurate survey of the earth's crust and crustal history, (2) making observations of the earth's crust and developing new observation and research techniques, and (3) fabricating earthquake tectonic models and doing research on M7 inland prediction techniques. |
| (3) Research on inland prediction methods for magnitude 7 earthquakes | 2 - 4 (phase I) | In order to elucidate the major influences the oceans are believed to be having on global climate changes, particularly general ocean circulations extending across wide areas involving deep layer regions, these activities will be part of an international joint research project known as WOCE (World Ocean Circulation Experiment) and will focus on (1) using observation and analysis to elucidate the actual condition of general ocean circulations, (2) general ocean circulation research based on mathematical models, and (3) observation systems needed for elucidating general ocean circulations. |
| 3. International joint research | 2 - 4 (phase I) | In order to elucidate the major influences the oceans are believed to be having on global climate changes, particularly general ocean circulations extending across wide areas involving deep layer regions, these activities will be part of an international joint research project known as WOCE (World Ocean Circulation Experiment) and will focus on (1) using observation and analysis to elucidate the actual condition of general ocean circulations, (2) general ocean circulation research based on mathematical models, and (3) observation systems needed for elucidating general ocean circulations. |
| (1) International joint research on elucidating general ocean circulations and establishing a comprehensive observation system | 2 - 4 (phase I) | With the objective being to observe North Pole regions believed to be most notably affected by global changes such as global warming and ozone layer depletion, this research will involve (1) observation of various atmospheric phenomena, (2) observation of transportation processes of heat, water, and materials in the hydrosphere, (3) elucidation of climatic and environmental fluctuations from the ice floor, (4) ascertaining plant conditions, and analyzing and evaluating their effects on the hydrosphere, and (5) predicting and evaluating global-scale changes. |
| (2) International joint research on interaction of atmosphere, hydrosphere, and biosphere at the North Pole | 2 - 4 (phase I) | With the objective being to observe North Pole regions believed to be most notably affected by global changes such as global warming and ozone layer depletion, this research will involve (1) observation of various atmospheric phenomena, (2) observation of transportation processes of heat, water, and materials in the hydrosphere, (3) elucidation of climatic and environmental fluctuations from the ice floor, (4) ascertaining plant conditions, and analyzing and evaluating their effects on the hydrosphere, and (5) predicting and evaluating global-scale changes. |
| (3) International joint research on developing landslide forecasting methods for volcanically active areas | 2 - 4 (phase I) | In order to develop ways of forecasting the possibility of landslides in volcanically active regions directly in the line of danger from volcanic eruptions, and in areas where there is large-scale sedimentation movement and disaster intensity is extremely high due to topographical instability of steeply-inclined stratified structures, this research will focus on (1) locales where landslides have occurred, (2) the sedimentation movement process, and (3) disaster evaluation methods. |

| Research | Term | Particulars |
|--|---------------------|---|
| (4) International joint research on elucidation of desertification mechanism | 0 - 3 (phase I) | Desert regions comprise one-third of the total land area of the earth and is growing at the rate of 60,000 square kilometers each year, so requests have been made to investigate this phenomenon from an earth science perspective and develop a basic technology to prevent this from occurring. Therefore, in a joint international research project with China, this project will focus on (1) elucidating the history of desert formations, (2) analyzing the desertification status-fluctuation mechanism, (3) elucidating the interaction between desertification and climate changes, (4) elucidating the ecosystem maintenance and recovery mechanism in semi-arid regions, and (5) simulating the desertification mechanism and how to prevent it from occurring. |
| (5) Research on elucidating ocean plate formation areas (lift system) in the South Pacific | 2 - 3 (phase II) | The ocean plate formation areas in the South Pacific Region are expected to help us understand plate tectonics and help with the search for mineral resources, i.e. hydrothermal deposits. In that regard, research will involve itself with (1) elucidating the plate formation mechanism in the Haiko basin, (2) conducting surveys and doing research on hydrothermal activities and surrounding environments in the "lift" system. |
| (6) International joint research on elucidating physical, chemical, and biological phenomena in micro-gravity environments | 2 - 3 (phase II) | In order to more accurately ascertain the basic physics, chemistry, and biology in microgravity environments which is essential if full use is to made of that environment, a joint international research project is being conducted with Europe and the United States on microgravity environments that will try to elucidate (1) physical phenomena (flows, conduction, etc), (2) chemical phenomena (combustion, etc), and biological phenomena (gravity-sensitive responses of cells, etc). |
| (7) International joint research on technology for testing and evaluating new materials | 0 - 3 (phase II) | When it comes to R&R for new materials, a universal evaluation technology is needed. As part of an international joint research involving Europe and the United States, this research will focus on (1) prototype evaluation methods for important new materials (engineering ceramics, superconducting materials, etc), (2) basic uniform prototype evaluation methods (surface chemistry analysis, friction tests, etc), and (3) promoting interaction between material data bases. |
| II. Surveys, Analyses 1. "Soft" survey subjects (1) Survey on direction and growth of science and technology | 3 | In order to ascertain advanced interdisciplinary R&D trends in a timely and accurate manner, and clarify the future direction of R&D, this survey will concern itself with (1) world-wide growth trends in advanced science and technology fields by holding discussions among researchers from different fields, (2) long-term forecasting methods, (3) the current state and direction and growth of leading fusion technologies, and (4) the current state of interdisciplinary research between natural sciences and human and social sciences. |
| (2) Survey on promotion of international science and technology | 3 | In order to study what specific actions to undertake to promote the globalization of science and technology, the survey will be conducted on (1) the current state of technology transfers by the United States to developing countries, (2) the policies for promoting cooperative research and technology transfers in urban and residential areas of developing countries. |

| Research | Term | Particulars |
|--|------|---|
| 2. FS surveys (1) Survey on creating intelligent materials using a revolutionary electronic-crystal structural control technology | 3 | In order to develop intelligent materials and new functional materials that have their own decision-making capabilities, this survey will investigate (1) the research trends in electronics/quasi-crystalline control, and (2) the basic research and methodology for creating intelligent materials using electronic/quasi-crystalline control technology. The survey will then investigate the research methods, methodology, and problem areas anticipated in its development. |
| (2) Survey on creating intelligent materials that imitate biological functions and their applications | 3 | In order to contribute to the creation and application of intelligent materials that imitate biological functions including stimulus-response and environmental adaptation mechanisms on a higher order than conventional functional materials, this survey focus on (1) the research trends regarding stimulus-response-intelligent materials used in polymer gel systems, and (2) the research trends regarding bio-intelligent materials used in ceramics. The survey will then elucidate the problem areas in their development and come up with the best policies for promoting R&D in the future. |
| (3) Survey of basic technologies for developing intelligent human interfaces that assist creativity | 3 | In order to build the optimum environment for aiding creativity through the development of an intelligent human interface, this will be a survey that covers (1) basic technological trends in intelligent human interfaces used to support creativity, and (2) the most effective ways to select research material and promote research on the basic technologies used in intelligent human interfaces that support creativity. The aim of the survey then is to elucidate policies to promote its development. |
| (4) Survey on elucidating dynamism of biomolecular nanostructures and inventing applications | 3 | In order to develop a common basic technology for analyzing bio-energy conversion, and information communication and membrane transfer functions found in the dynamism of biomolecular aggregates in which functions operate at the 10^{-9} level (nanostructure), the surveys will be conducted on (1) the basic technologies required for making direct biomolecular observations, (2) research by direct observation of functional structures and their formation in biomolecular aggregates. The survey then tries to develop future research material that should be promoted. |
| (5) Survey on carbon dioxide fixing from geochemical perspective | 3 | In order to promote research on carbon dioxide fixing reactions based on carbon rock salt, this survey will focus on (1) the current state of carbon dioxide fixing in geosphere and hydrosphere, (2) the research trends in carbon dioxide fixing from a geochemical perspective, (3) simulation models based on geochemical carbon dioxide cycles, and (4) research topics pertaining to carbon dioxide fixing from a geochemical perspective. |
| (6) Survey on marine substance circulation research | 3 | In order to elucidate the behavior and main factors regulating the behavior of elements such as nitrogen and phosphorous which are having an effect on the biological plant plankton processes, this survey will focus on (1) research trends tied to marine substance circulation, and (2) survey research methods and research policies for promoting future research in this field. |

| Research | Term | Particulars |
|--|-------|---|
| III. Interministerial basic research | 3 yrs | At the main national research laboratories, the ministry-agency framework will be superseded by recruiting people from around the world to participate in basic research and by having a people-first operation. |
| IV. Regional research on fluids | 3 - 5 | There are a number of serious problems that have to do with Lake Biwa. These include worsening water quality, altered biota, decreasing levels of dissolved oxygen, and increased red tide. This research project will focus on developing an advanced observation system for lakes and marshes that will be used to provide a complete elucidation of the mechanism for poor water quality in Lake Biwa. This will involve developing a more sophisticated and accurate aquatic plant sensing and water quality observation method, elucidating the basic mechanism involved in eutrophication, and evaluating the effect that global climate changes are having on lakes and marshes. |
| (1) Research on advanced methods for observing lake and marsh environments of Lake Biwa and improving water quality (Shiga Prefecture) | 3 - 5 | The innovative materials that are gaining attention in organic and inorganic boundary and transition regions is the primary focus of research on intelligent materials that are expected to represent completely new phenomena with high functionality. In order to perfect the method for designing intelligent functions into materials and elucidating how that mechanism works, basic research will focus on creating intelligent surface layers in inorganic and organic materials and making intelligent composite interfaces. |
| (2) Basic research on creating intelligent inorganic compounds and organic composite materials (Osaka Prefecture) | 3 - 5 | The innovative materials that are gaining attention in organic and inorganic boundary and transition regions is the primary focus of research on intelligent materials that are expected to represent completely new phenomena with high functionality. In order to perfect the method for designing intelligent functions into materials and elucidating how that mechanism works, basic research will focus on creating intelligent surface layers in inorganic and organic materials and making intelligent composite interfaces. |
| (3) Research on technology for measuring and applying biological radicals (Yamagata Prefecture) | 2 - 4 | To gain a better understanding of biological free radicals that have a profound affect on various physiological functions and diseases, this research will focus on: a technology for measuring free radical levels in living organisms based mainly on the ESR method, a technology for analyzing bio-information systems, and elucidation of the reaction mechanism in biological radicals. |
| (4) General research on specially structured ceramics made by colloid processing (Fukuoka Prefecture) | 2 - 4 | In order to build large complex products such as solid electrolytic fuel cells and gradient function materials which are hard to work with when manufacturing special-purpose ceramics, basic research will focus on: creating specially structured ceramics made by colloid processing, and evaluating special ceramic properties such as functionality, mechanical features, and chemical durability. |
| (5) Research on understanding mangrove-based ecosystems (Okinawa Prefecture) | 2 - 4 | Notwithstanding the importance of maintaining regional ecosystems, environments, and marine resources, this research will try to provide a better understanding of the ecosystem chain based on a mangrove ecosystem. These trees are being quickly deforested for economic development and are indicative of worsening environmental conditions and depleted resources. In addition to using this research to develop protective measures for the environment and marine resources, the research will focus on special physiological functions, and developing methods for seed cultivation, reforestation, and soil fertilization. |

| Research | Term | Particulars |
|---|------|---|
| V. Key International Joint Research Projects | 3 | In order to fulfill our duties as one of the advanced countries in the world and meet the expectations of the world community, Japan will have to take an active and comprehensive role in promoting various international cooperation arrangements. To do that, AIST will promote international joint research between individual governmental research laboratories in Japan and individual research institutions in other countries by arranging various science and technology cooperation agreements. |
| VI. International Exchange | 3 | In order to more effectively and efficiently promote international research exchange programs between countries as a matter of policy in key science and technology fields, AIST will hold an international workshop so that researchers from around the world can come and see what research trends are taking place in other countries. The workshop can also be a place where the needs of each countries can be identified and a place where researchers can directly exchange ideas concerning the possibility and means of cooperation. |
| VII. Key Basic Research | 3 | This area will focus on promoting basic research at national research laboratories so as to emphasize the independent creativity of researchers and develop the seeds for new revolutionary technologies. |
| VIII. Emergency Research (1) Emergency research | 3 | This area will include dynamic research and surveys to deal with sudden emergency situations that may occur during the year such as natural disasters, social unrest, or international emergencies. |
| IX. Special Science and Technology Research Members | 2 - | By hiring young creative researchers at the national research laboratories, AIST will take an aggressive role toward basic research at its national research laboratories and try to energize those institutions. |

1991 Revised Budget for MITI Science and Technology Special Coordination Fund Projects (unit: million yen)

| | Research | Laboratory | Budget |
|----|--|--|--|
| 1 | (General Research) Basic technology research on quantitative, intelligent, non-destructive evaluation methods for materials and structures requiring high reliability | Mechanical Engineering Laboratory National Research Laboratory of Metrology | 14.935 7.716 |
| 2 | Basic technology research on new functions based on high purity of rare metals | National Chemical Laboratory for Industry | 24.646 |
| 3 | Basic technology research and development for materials with a gradient function for easing thermal stress | Mechanical Engineering Laboratory GIRI, Tohoku | 3,955 10.160 |
| 4 | Research for measuring, evaluating, controlling element functions in microscopic areas of substances and material | National Chemical Laboratory for Industry Electrotechnical Laboratory | 19.358 73.299 |
| 5 | Research on constructing data base for use in R&D on superconductive materials | Electrotechnical Laboratory Government Industrial Development Laboratory, Hokkaido | 2.385 2.385 |
| 6 | Basic research on methods for using host/guest reactions for creating new functional materials | GIRI, Tohoku National Chemical Laboratory for Industry | 19.255 11.709 |
| 7 | Basic technology research on material interconnections based on fabrication of ideal surfaces | GIRI, Osaka National Research Laboratory of Metrology Mechanical Engineering Laboratory | 11.547 49.853 25.623 |
| 8 | International joint research on testing and evaluation methods for new materials | GIRI, Nagoya National Research Laboratory of Metrology Mechanical Engineering Laboratory GIRI, Osaka Industrial Products Research Institute Research Institute for Polymers and Textiles Electrotechnical Laboratory | 2.707 1.169 4.027 3.457 2.824 17.333 6.643 |
| 9 | Developmental research for generating, measuring, and utilizing super high vacuums | Electrotechnical Laboratory | 36.782 |
| 10 | Research on technology for generating and utilizing vacuum ultraviolet light | National Chemical Laboratory for Industry | 30.881 |
| 11 | Developmental research on common basic technology for elucidating the structure and function of sugar chains | National Chemical Laboratory for Industry | 7.234 |
| 12 | Basic technology research on utilization of bioenergy conversion functions | National Chemical Laboratory for Industry Electrotechnical Laboratory Research Institute for Polymers and Textiles Mechanical Engineering Laboratory | 26.383 14.218 4.539 6.542 |

| | Research | Laboratory | Budget |
|----|--|---|-----------------------------------|
| 13 | Developmental research on technology for analyzing and controlling bio-information transmission mechanism | National Chemical Laboratory for Industry | 4.507 |
| 14 | Basic technology research on development of new plant experiments | Fermentation Research Institute | 10.051 |
| 15 | Basic technology research for elucidating infiltration and metastasis mechanism of cancer cells | Fermentation Research Institute | 9.478 |
| 16 | Developmental research on high-sensitivity, high-resolution, non-destructive methods for measuring living organisms at the molecular level | Mechanical Engineering Laboratory National Chemical Laboratory for Industry | 28.983 4.614 |
| 17 | International joint research on elucidating desertification mechanism | Geological Survey of Japan | 7.855 |
| 18 | Research on elucidating ocean plate formation areas (lift system) in the South Pacific | Geological Survey of Japan | 44.241 |
| 19 | International joint research on elucidation and establishment of comprehensive observation system for general ocean circulations | Geological Survey of Japan Electrotechnical Laboratory | 23.035 9.757 |
| 20 | International joint research on interaction of atmosphere, hydrosphere, and biosphere at the North Pole | National Research Institute for Environment and Resources | 4.434 |
| 21 | Basic technology research on sensor fusing | Industrial Products Research Institute Electrotechnical Laboratory | 8.712 40.944 |
| 22 | Research on building self-organizing data-base system to aid R&D creativity | Electrotechnical Laboratory | 54.845 |
| 23 | Research on fuzzy-logic system and application in human and natural systems | Industrial Products Research Institute | 9.605 |
| 24 | International joint research on elucidating physical, chemical, and biological phenomena in microgravity environment | Electrotechnical Laboratory GIRI, Osaka Geological Survey of Japan National Chemical Laboratory for Industry | 7.425 13.788 0.700 2.421 |
| 25 | General research on creating advanced earthquake prediction methods for the Tokyo metropolitan area | Geological Survey of Japan | 20.096 |
| 26 | Research on inland prediction technology for magnitude 7 earthquakes | Geological Survey of Japan | 22.187 |
| 27 | International joint research on developing land-slide forecast methods for volcanically active regions | Geological Survey of Japan | 19.549 |
| 28 | Research on creating advanced methods for dealing with snowfall accumulations | GIRI, Tohoku Mechanical Engineering Laboratory | 2.343 2.194 |
| 29 | (Interministerial basic research) Molecular research on sugar chain recognition mechanism in protein | National Chemical Laboratory for Industry | 38.893 |
| 30 | Research on optical arithmetic operation method | Electrotechnical Laboratory | 44.862 |

| | Research | Laboratory | Budget |
|----|---|--|-----------------|
| 31 | Elucidation of RNA high-order structure and function and applied research on synthetic ribozymes | Fermentation Research Institute | 50.631 |
| 32 | Research on functional materials with high bio-adaptability | Research Institute for Polymers and Textiles | 42.323 |
| 33 | Research on measurement and evaluation technology for thermal properties of advanced film and fiber materials | National Research Laboratory of Metrology | 45.848 |
| 34 | Research on magneto-optical effects in non-equilibrium substances | Electrotechnical Laboratory | 51.818 |
| 35 | (Regional Research on Fluids) Research on advanced methods for observing lake and marsh environments around Lake Biwa and improving water quality (Shiga Prefecture) | Electrotechnical Laboratory GIRI, Chugoku | 8.443 7.898 |
| 36 | Basic research for creating intelligent inorganic compounds and organic composite materials (Osaka Prefecture) | GIRI, Osaka Electrotechnical Laboratory | 4.722 6.476 |
| 37 | General research on specially structured ceramics made by colloid processing (Fukuoka Prefecture) | GIRI, Kyushu | 17.750 |
| 38 | Research on elucidation of mangrove-based ecosystems (Okinawa Prefecture) | GIRI, Kyushu GIRI, Chugoku | 13.702 4.513 |
| 39 | (Important international joint research projects) Research on establishing international standards for fixed interatomic distances | National Research Laboratory of Metrology | 6.676 |
| 40 | Advanced robotics with applications targeted for non-production fields | Mechanical Engineering Laboratory | 6.122 |
| 41 | Research on intelligent bioreactor systems | GIRI, Nagoya | 5.040 |
| 42 | Research on hybrid, physiologically active proteins and polymers | Research Institute for Polymers and Textiles | 3.002 |
| 43 | Research on CO ₂ fixing by artificial photosynthesis | National Chemical Laboratory for Industry | 4.624 |
| 44 | Research on treatment methods for organic halogen compounds | National Chemical Laboratory for Industry | 4.070 |
| 45 | Evaluation of materials that configure molten carbon fuel cells based on fuel cell testing method | GIRI, Osaka | 4.258 |
| 46 | Research for ultrafine metallic graphite composite based on graphite family compounds | GIRI, Osaka | 5.209 |
| 47 | Research for creating geophysical model of Mt. White volcano in New Zealand | Geological Survey of Japan | 6.252 |
| 48 | Basic research on rock fracturing process based on acoustic emissions | Geological Survey of Japan | 4.762 |
| 49 | Research on large, experimental reverse-magnetic pinch nuclear fusion apparatus | Electrotechnical Laboratory | 2.900 |

| | Research | Laboratory | Budget |
|----|---|---|-----------|
| 52 | Research on analysing and making models of cerebral cortex as it pertains to motor sensations | Industrial Products Research Institute | 4.938 |
| 53 | Research on elucidating cause of acid rain | National Research Institute for Environment and Resources | 5.894 |
| 54 | Research on NO _x reduction using solid catalysts | National Research Institute for Environment and Resources | 4.614 |
| 55 | Basic research on integrating coal decomposition system and combustion system | Government Industrial Development Laboratory, Hokkaido | 4.902 |
| 56 | Research for eliminating organic sulfur in coal | Government Industrial Development Laboratory, Hokkaido | 5.449 |
| 57 | Research on developing composite metals by pressure casting method | GIRI, Kyushu | 3.872 |
| 58 | (Key International Exchange Projects) Workshop on atomic/molecular level measurement and manipulation, and the physical properties found in mesoscopic regions | Electrotechnical Laboratory | 10.183 |
| 59 | Workshop on biofunctions and structural regeneration | Mechanical Engineering Laboratory | 11.108 |
| | (Key Basic Research) 58 Items | | 380.848 |
| 60 | (Surveys) Survey on promotion of international science and technology activities | AIST | 7.088 |
| 61 | (Emergency Research) Emergency research on various phenomena that accompany magna activities of Mt. Unzen | Geological Survey of Japan | 10.352 |
| | TOTAL | | 1,639.069 |

Other AIST Research-Related Policies

93FEO225E Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 454-457

[Text] 1. Promotion of International Research Cooperation

There has been a worldwide trend taking place in which technology diplomacy is being given great importance. It is often the centerpiece of conversation between national leaders at local and international conferences.

As international acclaim for Japanese manufacturing techniques has grown, so too have the number of requests for technology exchanges from the advanced countries of Europe and the United States which until recently have thought they could learn very little from Japan. Japan is continually being asked to contribute more actively at the international level and to enact policies that allow technical exchanges with developing countries.

Japan has also been asked to intensify the work it is doing to foster science and technology cooperation agreements between the United States and Japan and intensify work on global environmental issues where worldwide concerns have grown.

In that context, in FY92, AIST will extend invitations to foreigner researchers and try to bolster its international research exchange programs and international research cooperation agreements involving global environment related technologies. In addition, it will enact some new programs as part of the New Energy Development Organization (NEDO) project to promote international production technologies.

(1) International joint research and international research cooperation

1) Specific international joint research programs

AIST will try to promote joint R&D programs between national research laboratories and the research institutes in advanced countries in areas where they share global concerns. As for general research projects in 1992, in addition to the four research projects being continued from the previous year, there is a new joint research projects being undertaken by the Mechanical

Engineering Laboratory and the National Metrology Laboratory of Australia on high-precision, shape-measuring hologram interferometers. With regard to international joint research on global environmental issues, there are two new projects entitled "research on mechanism for methane gas emission into the atmosphere" and "research on acid rain production, transportation, and decomposition processes." These projects concern the prevention of major environmental destruction by global warming and acid rain that accompanies increased levels of methane gas.

2) Cooperation agreements with developing countries

a. International Trade and Industry Technology Program (ITIT Program)

This program involves trying to solve research problems and improve research performance in developing countries by applying the research potential of national research laboratories to research cooperation in the mining and manufacturing fields where the strongest requests have been received from developing countries.

This aim of the program is to build a more vigorous research program focused on global environment technologies in order to cope with the worldwide demands over environmental pollution, i.e. destruction of forests, acid rain, etc., that have become of increasing concern in recent years.

b. Research cooperation programs

"Research cooperation on machine translation system for neighboring countries"

This program focuses on the development of a machine translation system that can provide translations between the Japanese, Chinese, Thai, Malaysian, and Indonesian languages. It will be used to help resolve the various economic and social issues shared by developing countries.

"Research cooperation on technology for recovering valuable resources from brackish water"

This is an R&D program that focuses on the development of a comprehensive system for systematically recovering valuable resources such as lithium, barium, bromine, magnesium, and boron which can be found in brackish water from Mexican salt manufacturing plants and Chinese salt water lakes.

(2) International research exchange program

This is a research exchange program that invites foreign researchers from countries that have shown the strongest interest. It will involve increasing the number of young foreign researchers invited to national research laboratories from countries showing strong interest in participating in such

research programs. The program also investigates the possibility of these researchers being accepted by private research organizations makes decisions on the subject matter to be researched.

The program also provides various support services such as a Japanese language training program, lifestyle adjustment consultations, housing accommodations, and references in order to assist the foreign researchers adjust to the new lifestyle of Japan and ease their acceptance at the AIST research laboratories.

As part of the New Energy and Development Organization (NEDO) project, AIST intends to strengthen international research cooperation by enacting the following four programs on its own: (1) an international research cooperation program, (2) an international research exchange program, (3) a researcher training program, and (4) an international joint research support program.

<Budget>

(unit: million yen)

| Promotional Activity | FY92 budget proposal | FY91 budget |
|---|--|--|
| 1. International joint research and international research cooperation (1) Special international joint research programs [general accounts] Ex: Global environmental technologies (2) Cooperation with developing countries 1. International industrial technology research programs [ODA] Ex: Global environmental technology research programs, research exchange programs 2. Commissioned research cooperation projects 3. Promotional programs for research cooperation programs [ODA laboratory portion] Ex: Development of machine translation system for neighboring countries | 377 94 38 283 265 51 46 0 25 18 | (345) (82) (38) (263) (254) (31) (39)* (4) (25) (19) |
| 2. International research exchange programs [general accounts] Ex: Laboratory expense, commissioned expense | 221 19 202 | (179) (18) (161) |
| 3. International industrial technology related programs (1) International research cooperation programs (2) International research exchange programs Ex: Commissioned expense (3) Researcher training programs (4) International joint research assistance programs | 1,848 1,076 302 248 10 459 | (1,027) (256) (253) (200) * (--) (517) |
| TOTAL | 2,198 | (1,351) |

(* denotes overlapping)

2. Basic Research Facilities Program

As R&D for industrial technologies has increased, the facilities required to conduct that R&D have grown larger and become more specialized. This has made it cost ineffective for individual companies and research organizations to

purchase advanced research and development facilities. This program, based on private funding alone, provides companies with the facilities and researchers they will need to conduct advanced research.

The operation and upkeep of the facilities is handled by a Third Sector set up within each facility. The Third Sector is funded by the NEDO budget based on the law pertaining to industrial technology R&D (1988 Law No. 33).

The FY92 budget has allocated ¥700 million to NEDO from the industrial investment account under the industrial investment special account set up to continue funding on three projects.

The Third Sector can also borrow 70% of loan amounts at interest-free rates from the Japan Development Bank or Hokkaido-Tohoku Development Bank, while any commercial loans it needs are guaranteed by an industrial base consolidation fund.

<Continuing Projects>

(1) Underground Zero-Gravity Experimental Research Center
(location: Kami-Sunagawa, Hokkaido)

The center is made from an existing shaft of an old coal mine and equipped with vertical free-fall equipment and is used to conduct various types of short-term (10 seconds) zero-gravity experiments. The center was founded in March 1989 and a portion of the facility was opened for public use in 1991.

(2) Super High-Temperature Materials Research Center
(locations: Ube City, Yamaguchi Prefecture, and Tajimi City, Gifu Prefecture)

These are two facilities that were built for the express purpose of conducting research and evaluation on the physical properties and functions of materials under super high-temperatures. The centers were founded in March 1990 and open for public use in April 1992.

(3) Industrial Science and Technology High-Speed Analysis Center (tentative name) (location: under study)

This will be a facility designed to conduct atomic and molecular level behavior analysis that is required for developing new materials and compounds. It will be equipped with high-speed simulation equipment for developing mechanical systems such as aircraft, automobiles, and atomic reactors.

<Completed Projects>

(1) Mining and Manufacturing Applied Technology Research Center on Marine Life (locations: Kamaishi City, Iwate Prefecture, and Kiyomizu City, Shizuoka Prefecture)

These centers were built for conducting research on marine life uses by the mining and manufacturing industries. The center was founded in November 1988 and opened for use in 1990.

(2) Ion Engineering Center (location: part of Kansai Cultural Science Research City (Hirakata City, Osaka)

This facility was built for conducting research on ion beam applications for industry. It was founded in November 1988 and opened for use in 1992.

(3) Laser Application Engineering Center
(location: Nagaoka City, Niigata Prefecture)

This facility was built for doing research on laser applications in industry. The center was founded in March 1990 and fully opened for use in 1992.

| General Accounts | FY92 budget proposal | FY91 budget |
|--|---------------------------|-----------------------------|
| Industrial investments | 700 | (2,400) |
| Specialized industrial investment loans (NTT interest-free loans) | ¥70 billion (included) | (¥70 billion) (included) |

3. Regional Technology Exchange Program

(Research exchange, and measures to prevent technology mergers)

As science and technology have evolved, regional companies have become more actively involved in research and development. This has created new research and technology needs rooted in the unique industrial characteristics of each region. In that context, the expectations placed on national research laboratories established in each region of the country are growing larger year by year. In actuality, however, those expectations have not been fulfilled because the research laboratories in those areas lack the necessary human resources and technical potential.

Looking back at the rapid progress made in recent years in science and technology, we take note of how specialized research has become and the fact that mergers have taken place between various research fields. In order to make the best use of the limited human and financial resources in those national research laboratories and conduct effective research, this program

will try to try to identify the "seeds" of new research and give more careful thought to research projects and how they relate to new theories and phenomena.

To deal with the changing times, the program will focus on regional research and technology needs by examining the research potential existing in both regional research laboratories and the Tsukuba research laboratories.

With regard to specific activities, the program will send top-level researchers from AIST for temporary periods of time to places doing leading research in those particular regions. These researchers will try to ascertain the direction of research and the research needs in those particular regions by conducting experiments and holding discussions at those research facilities.

<Program Outline>

(1) Dealing with regional research and technology needs

To respond to the regional research and technology needs in each geographical region, regional research laboratories have been implementing research by establishing research topics that concern regional research and technology needs. In particular cases where difficulties have been encountered when implementing this research, this program lends the support of researchers working in Tsukuba research laboratories and tries to solve the particular problems of the regional research laboratories, thereby providing an effective and appropriate response to the research and technological needs of regional research laboratories.

In addition, specific researchers from Tsukuba research laboratories will be assigned for fixed periods of time (few years) to special exchange officers working in regional research laboratories, and several times a year for periods of a few weeks each, these researchers will be sent to their assigned regional research laboratory to provide general research assistance, i.e. identifying research topics. More specifically, by putting those researchers in a research advisory role, this program will try to improve the research potential in particular research fields at particular research laboratories. It will target personnel development and try to deal appropriately with the research and technology needs of each research laboratory.

(2) Centralized research laboratories with researchers from multiple research institutes

The program seeks to identify the "seeds" of new research areas related to particular research fields by having researchers from research laboratories with different advanced research agendas discuss the problems they are confronted with in their fields of study for fixed periods of time at a centrally located place.

<Budget: unit: million yen>

| General Account | FY92 Budget proposal | FY91 budget |
|---|----------------------|-------------|
| Research exchange and merger prevention | 27 | (27) |

4. Japan Key Technology Center Program

In November 1985, the Japan Key Technology Center was opened in order to promote experimental research. It was designed primarily to support basic and applied research by private industry which accounts for around 80% of the R&D expenditures in Japan. The FY92 budget proposal to fund such programs, which are its main activities, is ¥28.5 billion. This contains ¥2.5 billion for loan recovery costs in addition to ¥26.0 billion for funding the industrial investment special account.

The total budget for funding programs in FY91 was ¥31.4 billion with 2.8 billion budgeted for loan recovery on top of ¥28.6 billion for the industrial investment special account (includes ¥2.6 billion capital investment in fixed assets used to help confirm research results).

Below, we list the basic activities of the Japan Key Technology Center.

(1) Capital investment Program

This program invests in corporations which have been established jointly by two or more corporations. The companies must conduct experimental research on basic technologies beginning at the basic and applied research stage. (investment ratio under 70%).

Number of New Investments (unit: investments)

| | FY88 | FY89 | FY90 | FY91 |
|--|----------|----------|----------|----------|
| R&D projects (includes mining and manufacturing fields) | 4 (2) | 3 (1) | 3 (3) | 3 (2) |
| New media communication, Teletopia | 4 | 4 | 0 | 0 |
| TOTAL | 8 | 7 | 3 | 3 |

(2) Loan Program

This program makes conditional interest-free loans to companies conducting experimental research related to basic technologies beginning primarily from the applied research stage (loan ratio under 70%).

Number of New Loans (unit: loans)

| | FY88 | FY89 | FY90 | FY91 |
|---|------------|------------|------------|------------|
| Loans (includes mining and manufacturing fields) | 22 (12) | 26 (11) | 34 (13) | 29 (12) |

(3) Joint Research Mediation Program

This program provides mediation in experimental research projects to assist private companies conclude joint research agreements on basic technologies with national research laboratories.

(4) Overseas Researcher Invitation Program (International Research Cooperation Japan Trust Program)

This program uses public trust funds to extend invitations to top overseas researchers.

(5) Basic Technologies Information Program

This program is designed to collect a wide variety of information on basic technologies that are in the possession of national research institutions. The information is then repackaged and redistributed.

(6) Survey Program

This program conducts various surveys in order to help promote experimental research on basic technologies in the private sector.

Budget (Unit: million yen)

| Activity | FY92 budget proposal | FY91 budget |
|---|------------------------|----------------------------------|
| 1. Industrial capital investment special account Includes: Capital investment Loans Fixed assets | 260 220 40 -- | (286) (224) (36) (26) |
| 2. Self-funding Includes: Loan recovery | 56 25 | (46) (26) |
| 3. Program total Includes: Capital investment Loans | 285 220 65 | (288) (224) (64) |

5. Research Finding Uses, Surveys, and PR

(1) Research Finding Uses

The research findings obtained by both research laboratories operated by the Agency of Industrial Science and Technology and by various AIST commissioned R&D programs is the licensed property of AIST and acquisition of those findings is done by paying an appropriate royalty for their use. Acquisition of those results has gotten easier recently, particularly for overseas parties wanting access to that information. In FY92, therefore, AIST will try to disseminate its research findings over a wider area by stepping up PR and mediation activities on AIST industrial property rights. It will also try to prevent improper use of those rights by implementing proper control measures for those property rights.

(2) Technology Surveys and PR Promotion

In order to sustain sound economic growth in the face of environmental changes brought about by Japanese industry both inside and outside Japan, it is essential that technology be developed in a comprehensive and effective manner. When it comes to promoting the development of technology, AIST must draft comprehensive and relevant technology policies and increase the level of recognition and understanding of those technology policies and measures. To do that, the following steps are being taken.

1) Technology Surveys

This involves doing surveys on R&D trends both inside and outside Japan, evaluating the development of a technology, trying to come up with the best way to make research prediction, and incorporating this information into the planning and drafting of technology policies.

2) PR

In addition to conducting PR related to preparation and distribution of materials related to AIST operations and achievements, this involves consolidating technical materials from both inside and outside Japan.

(3) Development of Computer Application Technologies

Besides management of the Computer Application Technology Research Association established by the AIST executive committee, and the survey research on technical problems being faced in specialized fields needed to raise the level of computer use in government bureaus and ministries, this activity involves developing ways to share computer applications by government bureaus and ministries with regard to creating more productive work environments, aiding preparation of Japanese language documents, and developing end-user applications. It also includes promoting uses of research findings and trying to improve applied computer technologies and other new technologies.

<Reference>

In terms of the various technical issues confronting administrative fields regarding computer applications, the Applied Computer Technology Research Association, which was formed in 1968 and has a technical staff of 610 members spread throughout 29 ministries and agencies, will undertake the following activities with the help of the people responsible and knowledgeable for computer applications in ministries and agencies to conduct multi-dimensional survey research.

1. Survey on present status and trends inside and outside Japan regarding latest computer applications
2. Computer applications that can be shared by various ministries and agencies
3. Technology exchanges between ministries and agencies in order to raise the level of computer applications
4. Dissemination and use of research findings by joint announcements and PR releases

Budget (Unit: million yen)

| Activity | FY92 budget proposal | FY91 Budget |
|--|------------------------------------|---|
| 1. Research findings (1) Administrative costs and processing costs for domestic filing (2) Overseas application costs on government-owned patents (3) Research expense on patent infringement protection Total Includes: General accounts Special accounts | 41 122 3 166 150 16 | (41) (112) (3) (156) (140) (16) |
| 2. Promotion of technology surveys and PR activities (1) Technology surveys and PR activities (2) Social assessment of industrial technologies (3) Survey and development of research management system and forecasting system for inside/outside Japan Total | 25 2 5 32 | (25) (2) (5) (32) |
| 3. Development of computer applications | 37 | (37) |

Administration of AIST Laboratory R&D Activities

93FE0225F Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 463-468

1. Research Categories in AIST research laboratories

| Research | Research supervisor | Comments |
|---|---------------------|---|
| Ordinary Research <p>This category includes basic research where administration is entrusted to research laboratories themselves</p> | Lab director | Research expense per researcher for national research laboratories in 1992 according to AIST is ¥1.47 million |
| Special Research <p>This category includes technology-related research needed for administering trade and industry, and basic research involved in large-scale projects. The drafting of research projects is overseen by the Research Administration Division which determines which research projects will be carried out by which laboratories, and regulates and promotes the implementation thereof (Research coordination director oversees environmental pollution technology and peaceful applications of nuclear power; International R&D Cooperation Division oversees promotional activities for international industrial technologies and research projects). Research topics have been subcategorized under the following 25 headings.</p> <p>(1) Measurements and Standardization (2) Stability and Safety (3) Seismology (4) Natural Resources and Energy (5) Marine Development (6) Domestic Science (7) Biotechnology (8) Bionics (9) New Materials (10) Polymer Engineering (11) Reactions and Isolation Methods (12) System Engineering Applications (13) Electronics (14) Space Development (15) Information (16) Industrial Base (17) International Basic Research (18) Frontier Research (19) Specific International Joint Research (20) Mine Safety (21) Small and Medium Enterprise Protection (22) Peaceful Uses of Atomic Energy (23) Pollution Prevention (24) International Trade and Industry Technology Activities (25) Research Cooperation Project Promotional Activities</p> | Lab director | Categories 1-19 falls under the AIST budgets; category 20 is budgeted to the Industrial Sites and Environmental Protection Bureau; category 21 is budgeted to the Small and Medium Enterprises Agency; category 22 is budgeted to the Science and Technology Agency; category 23 is budgeted to the Environmental Agency; and category 24 and 25 are budgeted to the International Trade Policy Bureau of MITI. |

| Research | Research supervisor | Comments |
|---|-----------------------|---|
| <p>Designated Research</p> <p>This category includes research that has been designated for special promotion within AIST. At the present time, that research is categorized under one of the following:</p> <p>(1) Large-Scale Project (2) Sunshine Project (3) Moonlight Project (4) Medical and Welfare Equipment (5) Next-Generation Industrial Base (6) Key Regional Technologies (7) Bio-Function Application Technologies (8) Global Environmental Technologies</p> | AIST director-general | Budgeted are allocated to relevant bureaus in AIST. |

2. Overview of Research Administration

(1) Research requests

1) Requests from within MITI

At the beginning of each year, research requests are collected from all MITI agencies, bureaus, and divisions.

2) General requests from outside MITI

a. Various sub-committees affiliated with industrial technology councils.

b. Research requests at the five governmental research laboratories in Hokkaido, Tohoku, Chugoku, Shikoku, and Kyushu are handled by departments in those institutes corresponding to industrial technology committees and research institute joint subcommittees.

c. Research requests at the government research laboratories in Osaka and Nagoya are handled respectively by visiting members of the steering committee and management forum.

3) Regional research requests

Handled by AIST liaison committees.

(2) Research project policies

After a researcher who has designated a research project, or researcher who desires to work on a research project, drafts a manuscript of the research project proposal, it is submitted to an AIST research laboratory where a decision is made by the AIST research laboratory director and another meeting is scheduled with the agency. The project is then submitted to the AIST director-general who makes a final decision on the research project 20 days

before the start of each fiscal year in a yearly research project report for that year.

(3) Research implementation

AIST research laboratory directors submit progress reports twice a year to the AIST director-general concerning the status of projects. Also, staff members of AIST may check on a project as the need arises.

After research is completed, the AIST research laboratory director submits a report to the AIST director-general.

The project while being implemented is monitored daily by departments and divisions in charge of the project. The AIST research laboratory director takes appropriate measures including making changes to, or terminating, the project depending on its status.

If the project has to be changed or terminated during the course of the year, the AIST director-general must be notified and/or approve of those changes.

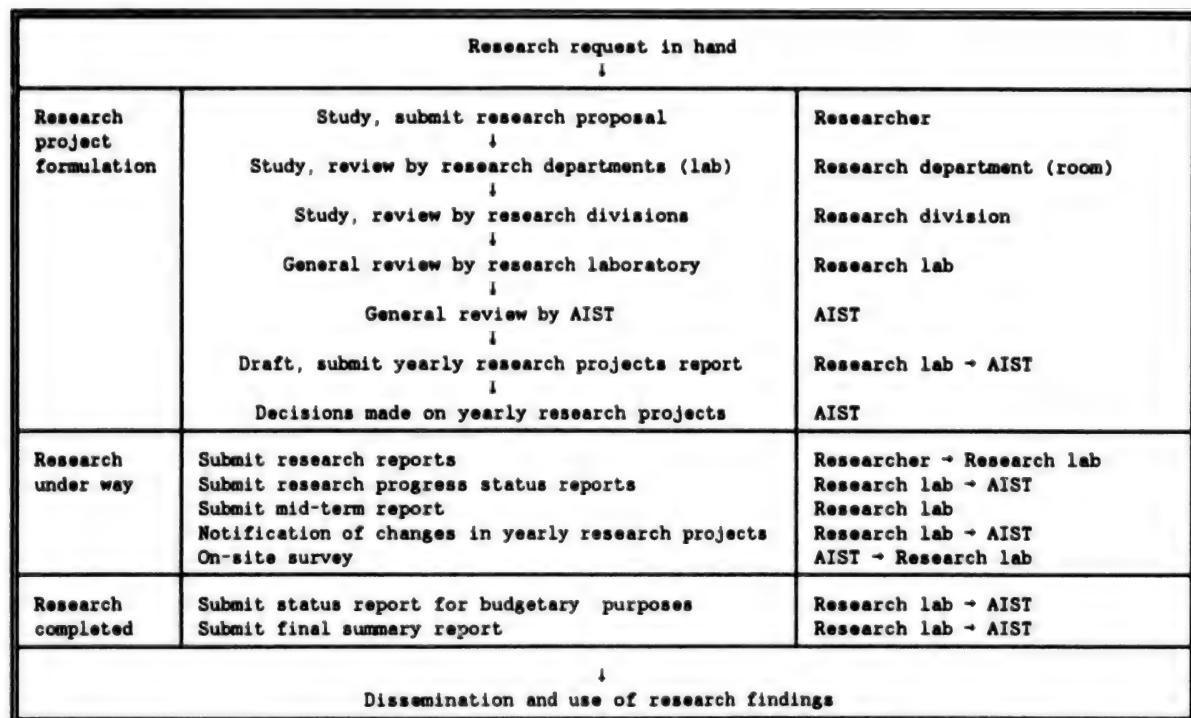
(4) Use and dissemination of research findings

Research findings such as measurements and standards, and safety and stability, can be put to use immediately upon administrative request. However, further research may be needed for commercialization with regard to those types of research findings which produce results that are connected with the commercialization of those results.

In terms of filing for industrial property rights regarding research findings, budgetary measures have been taken for domestic and international filings. The acquired industrial property rights are sold through exclusive licensing rights granted to the Japan Industrial Technology Association.

Dissemination of research findings are done with the exception of occasional disclosure through media organizations at academic conferences, lectures and seminars, or through publications.

Research Management Flow Chart



Basic AIST Research Laboratory Administration Guidelines

33.30--886 15 April 1958
 38.10--880 Revised: 25 June 1963
 43.10--1877 Revised: 1 October 1968
 60 Kogiso No. 6278 Revised: 29 October 1985

The Basic AIST Research Laboratory Administration Guidelines, hereinafter called Basic Guidelines, which are given below, are used to identify appropriate experimental research projects in AIST or at AIST research laboratories, hereinafter called AIST research laboratories. The Basic Guidelines provide regulations for the reasonable promotion of experimental research and the systematic and vigorous promotion of research administration, i.e. use of research findings.

Description

1. Aim of Research Administration

The aim of research administration is to demonstrate the full potential of AIST research laboratories and help them achieve their mission. This is done by selecting research items in which the mission and objective for conducting experimental research at those AIST research laboratories is considered appropriate for a national research laboratory, by fairly allocating research

projects and general research, by achieving coordinated and cooperative interactions between researchers, by continuously evaluating the implementation of research, and by effectively achieving the research objective and putting those results to use.

2. Definition of Research

The research conducted at AIST research laboratories is defined according to specific categories that include designated research, special research, ordinary research, and miscellaneous research.

3. Research Administrator

- (1) The overall responsibility for research administration falls to the director-general of AIST. The administration of designated research is also overseen by the AIST director-general. The administration of special research, ordinary research, and miscellaneous research is done under the supervision of each AIST research laboratory director.
- (2) The research manager for miscellaneous research is determined by the AIST director-general or AIST research laboratory director.

4. Selection of Research Projects

- (1) When the research administrator selects research categories, he/she shall set consistent standards for each research laboratory and implement that research properly after thorough study and evaluation.
- (2) Determination of research projects
 - a. The AIST research laboratory director, in addition to informally setting yearly budgets for selected research categories, will submit yearly research project reports to the AIST director-general as prescribed by AIST Research Laboratory Administration and Implementation Guidelines, hereinafter called Implementation Guidelines.
 - b. A decision on yearly research projects is made by the AIST director-general based on the aforementioned research project report that is submitted.
 - c. The AIST director-general may, as is deemed necessary, designates long-term research projects.
- (3) Research objective and term

As a rule, the research objective and term is determined when the research category is selected by the research administrator and/or when the research project is selected by the AIST director-general.

(4) Things taken into account when in research project selection

The following items are generally given special attention when the research manager selects research categories and when the AIST director-general selects research projects.

- a. Whether ample thought has been given to the views and wishes of interested parties in academia, industry, and government.
- b. Whether the long-term view has been taken into account by conducting a thorough analysis of technological trends both at home and abroad, and taking social and economic factors into account.
- c. Whether the necessary personnel and budgets for designated and special research have been confirmed.
- d. Whether ample thought has been given to establishing smooth working relationships among researchers.
- e. Whether the researcher has demonstrated his/her ability.

5. Administration During Research Implementation Period

(1) Research reports

- a. The research administrator shall as a rule submit research reports twice a year in accordance with Implementation Guidelines concerning research administration requirements.
- b. An AIST research laboratory director shall, in accordance with the Implementation Guidelines, submit a report to the AIST director-general concerning the budgetary status and progress of designated and special research projects

(2) Interim briefing sessions

- a. Interim briefing sessions shall be held periodically at each AIST research laboratory to make interim evaluations of research progress.
- b. A thorough study shall be made at these interim briefing sessions, concerning problems encountered in the course of doing the research.

(3) Changes in research project

- a. When an AIST research laboratory director wants to change or terminate one of the yearly designated research projects, or change or terminate one of the yearly special research projects, he/she must, in accordance with the Implementation Guidelines, receive prior approval from the AIST director-general.

- b. When an AIST research laboratory director wants to change a yearly designated research project, he must give prior notification to the director-general of AIST as provided in the Implementation Guidelines.

(4) Joint research

Regulations governing joint research that an AIST research laboratory director may conduct with outside research organizations is prescribed in the Basic Guidelines and in regulations governing AIST joint research and joint venture research.

(5) Research implementation surveys

- a. The AIST director-general shall send AIST staff members to AIST research laboratories on the order of twice a year to have them monitor research progress and issue a report on said designated research projects.
- b. The AIST director general may also send AIST staff members to AIST research laboratories as is deemed necessary in order to have them monitor progress and issue reports on research other than designated research.

(6) Things considered when administering research in progress

Research administrators should give special attention to the following items when administering research while in progress.

- a. When there are difficulties implementing a research project or achieving the research objective, the research manager should take appropriate measures which may be to make immediate change or terminate a research project.
- b. The research administrator should make every effort to coordinate cooperation between researchers and other interested parties.
- c. The research manager should immediately file for a patent or take other appropriate measures should an invention be made in the course of conducting research.

6. Post research

(1) Final summary report

When a designated or special research project is completed (includes partial completion), the AIST research laboratory director shall, in accordance with the Implementation Guidelines, submit a final summary report to the AIST director-general, and shall wait for acknowledgement regarding the designated research project.

(2) Post research evaluation

When a research project is completed, the research administrator shall make an overall evaluation in terms of cost and technology and determine the best way to put the research findings to use by highlighting the differences with the original research plan.

(3) Things to consider after a research project is complete

The research administrator should pay special attention to the following items when a research project has been completed.

a. The research administrator should make a final evaluation of problems encountered while implementing the research project and take appropriate measures such as creating new research material from the key research categories.

b. He/she should make every effort to publicize the research findings to interested parties in academia, industry, and government.

7. AIST Research Laboratory Research Administration and Implementation Guidelines

In addition to what is prescribed in these Basic Guidelines, the things that are necessary to implement these Basic Guidelines are also provided in the AIST Research Laboratory Administration Guidelines (33-30-886 15 April 1958).

AIST Research Laboratory Experimental Research Standard Categories

Below, we list the standard categories for AIST research laboratory experimental research, hereinafter called research.

Description

1. Ordinary research

Ordinary research is research which is typically done at national research institutes and generally includes the following targeted basic research on technologies required for MITI administration.

- (1) Research needed for steady growth of mining and manufacturing technologies
- (2) Research on establishing and maintaining standards
- (3) Research needed in law enforcement

2. Special research

Special research pertains to one of the following categories.

- (1) Developmental research on technologies needed for MITI administration
- (2) Research needed in large-scale projects, particularly targeted basic research, and research where quick solutions are needed

3. Designated research

Designated research is part of special research which has been designated as priority research by the AIST director-general.

4. Miscellaneous research

This includes examination, testing, analysis on request, and commissioned research.

Note: Nuclear energy related research, research for protecting small and medium enterprises, and other research related to nuclear energy bureaus are all treated as special research.

Things To Ask When Selecting Research Category

1. Is it research which should be done by a national research laboratory?
2. What is the relation to MITI?
3. What is motivation behind the research?
 - (1) Request from an administrative body
 - (2) Enforcement of related ordinance
 - (3) Request from the private sector
 - (4) Request from academia or another research institute
 - (5) Initiated by researcher
4. What about the scientific and economic value, and use of the research findings?
5. Are the specifics of the research project sound? (costs, timelines, etc)
6. What is the possibility of achieving the research objective? (chance of success)
 - (1) Given the equipment and personnel
 - (2) Given the current technologies (existence of basic research, degree of progress, etc)
 - (3) Given the research cost (Can it be done at minimum costs required?)

7. How suitable is the current research supervisor in terms of the research category?

8. Is there similar research? (If yes, what relation does it have with that research?)

9. If there are practical uses for the research, what plans are there for its commercialization? (What is the economic benefit?)

Linking Together AIST Research Laboratories: Research Promotion Councils

93FE0225G Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 471-473

[Text] Research Promotion Councils

The growth and progress in science and technology has forced research to go beyond conventional frameworks and develop into what are called interdisciplinary fields. Social and economic growth, on the other hand, have placed rather complex and very sophisticated demands on science and technology in terms of daily life and economic livelihood.

Under those circumstances, it has become absolutely critical for there to be more exchange programs, information exchanges, and research cooperation between researchers in those specialized fields that deal with specific generalized research subjects. At AIST, we have been working with several of these general research subjects spread across all the research laboratories. This has forced us to establish some kind of base for promoting more contacts, exchanges, and cooperation between researchers at AIST research laboratories where researchers are engaged in the same kind of research, and to coordinate that research in an effective manner. Therefore, in 1975, we established the following eight research promotion councils.

1. Polymer Research Promotion Council
2. Inorganic and Composite Material Research Promotion Council
3. Analysis and Applied Measurement Research Promotion Council
4. Bionics Research Promotion Council
5. Environmental Technology Research Promotion Council
6. Biotechnology Research Promotion Council
7. Mechatronics Research Promotion Council
8. Natural Resources Research Promotion Council

Outlines of Research Promotion Councils

1. Polymer Research Promotion Council

The Polymer Research Promotion Council was set up with the aim of establishing closer contacts, exchanges, and cooperation among those researchers working in

the field of high polymer research at AIST research laboratories. At the present time, there are approximately 300 researchers from 15 research laboratories participating on this council. There are nine subcommittees have been established in the research promotion council.

The activities planned for FY92 include: (1) a meeting of associated subcommittees to exchange information and discuss research, and also use that opportunity for researchers to interact and establish contacts with each other, (2) a conference to announce and release research findings, (3) lectures as is deemed necessary by corporate committees or subcommittees, (4) tours of polymer-related research institutes, (5) two annual conferences under the banner of "Tsukuba Polymer Research", and (6) various discussions on joint research problems being faced in polymer research.

2. Inorganic and Composite Material Research Promotion Council

The Inorganic and Composite Material Research Promotion Council was established in 1984 out of the reorganization of the Housing Technology Research Promotion Council and was set up in order to establish closer contacts, exchanges, and cooperation among researchers working in the fields of inorganic and composite materials, and to coordinate that research in an effective manner.

In addition to general meetings, the activities of the council in FY92 will include lectures and meetings by various subcommittees including those responsible for housing materials, ceramics, functional electromagnetic materials, functional chemical materials, and integrated technologies. These meetings will be designed to stimulate interaction among researchers and improve quality of research.

3. Analytical and Applied Measurement Research Promotion Council

This council has been designed to establish closer contacts, exchanges, and cooperation among researchers working in the analytic and applied mechanical and physical measurement fields, and to coordinate that research in an effective manner. At present, there are roughly 400 members.

The aim of the council is to work on the common problems facing chemical analysis and physical measurements even though the research may be substantially different.

In addition to discussing research planning, field trips, and a newsletter at the general meeting, the activities of the committee in FY92 are scheduled to include lectures and seminars put on by subcommittees concerned with analytical systems, state analysis, standards and quality, and reliability and evaluation.

4. Bionics Research Promotion Council

The Bionics Research Promotion Council was set up in order to establish closer contacts and promote exchange among researchers working in the fields of

bionics at AIST research laboratories, and to coordinate that research in an effective manner.

In addition to general meetings, the activities of the council in FY92 will include lectures and seminars by the subcommittees on medical and welfare equipment, biological instruments, bio-information, and biofunction imitation.

In addition to those activities, the committee will promote exchange programs between researchers by arranging field trips to related institutions, publishing a bionics newsletter, and promoting information exchanges.

5. Environmental Technology Research Promotion Council

The Environmental Technology Research Promotion Council, formerly the Industrial Pollution Research Promotion Council, was set up in order to establish close relations, interactions, and cooperation among researchers working in the field of industrial pollution, and those researchers working in AIST research laboratories who have concerns in that area, and to coordinate that research in an effective manner. At present, the committee has roughly 420 participating members. Besides the general meetings where special lectures are held and research announcements are made, the committee plans to hold meetings sponsored by the Japan Industrial Technology Association in which research findings on industrial pollution technology will be released. Various specialized subcommittees such as the one on noxious odors will sponsor forums and other get-togethers for the purpose of exchanging information. The council will promote more researcher exchange programs in order to create better industrial pollution research programs between companies working in the field of industrial pollution. It will also conduct field trips to various factories and monitor pollution conditions in industry. In addition to those activities, it will publish a newsletter and try to facilitate information exchange and communication among members of the council.

6. Biotechnology Research Promotion Council

The rapid increase in biotechnology R&D has led to an increase in the number of researchers working in this field at research laboratories operated by AIST. This research promotion council was set up in 1984 in order to create a base from which overall biotechnology research could be coordinated effectively. The council also intends to promote better exchange and cooperation between researchers working in the biotechnology field.

IN FY92, the committee will hold lectures and seminars sponsored by the four subcommittees on bioreactors, cell engineering, biofunction applications, and genetic engineering.

The committee is also planning to hold field trips, publish a newsletter, and hold a research exchange program.

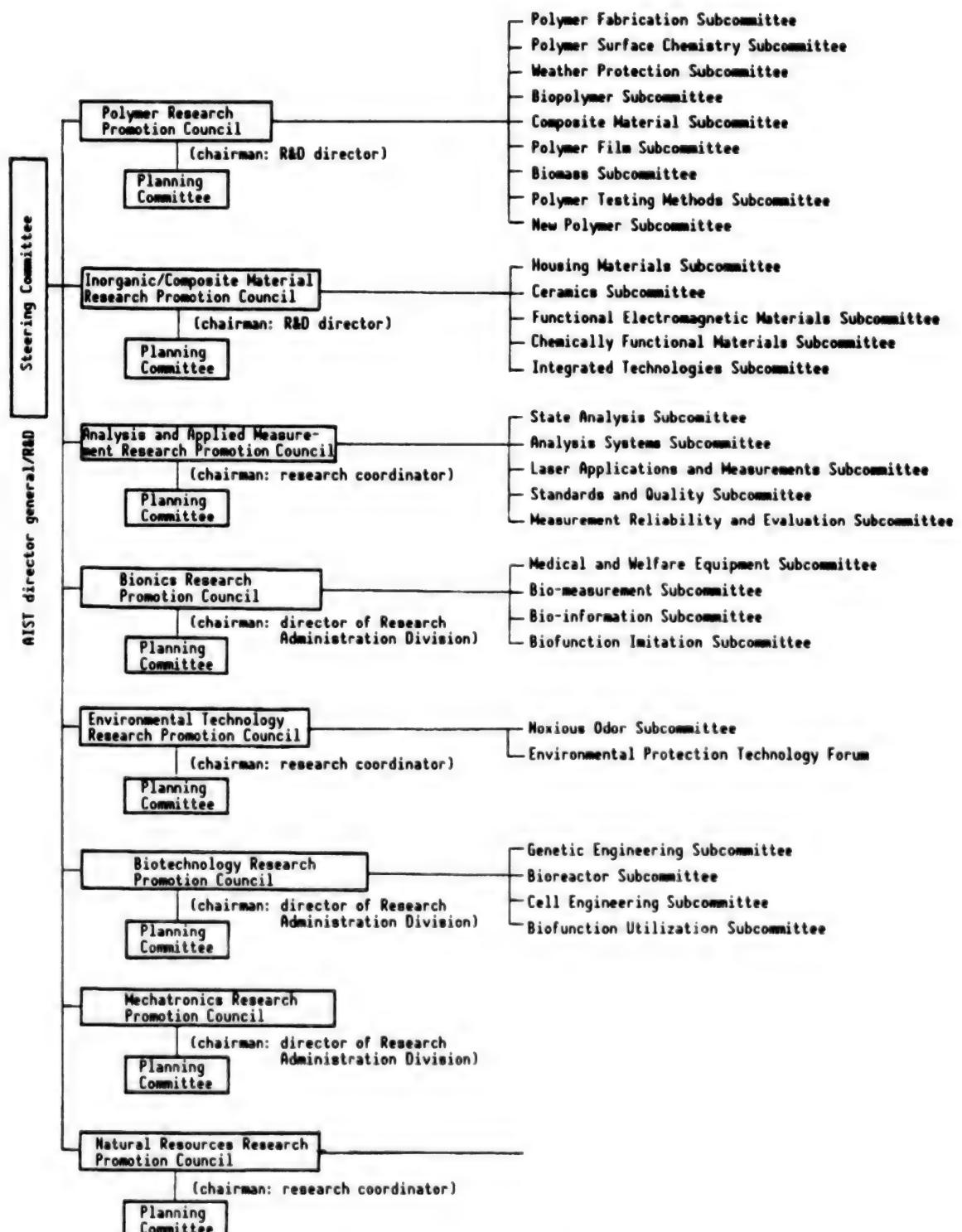
7. Mechatronics Research Promotion Council

The Mechatronics Research Promotion Council was started in 1984 as a tool to promote better cooperation and exchange among researchers working in the field of mechatronics (includes control technology: automation technology, system technology; and application technology: robot technology) at AIST research laboratories. At the present time, the council has roughly 100 members in 13 research laboratories.

In FY92, in addition to general meetings and lectures, the council is planning to release the results of research findings related to field trips, and also set up a new subcommittee.

8. Natural Resources Research Promotion Council

The Natural Resources Research Promotion Council was started in 1984 in order to establish better contacts, exchanges, and cooperation among researchers involved in, or with an interest in, the field of natural resources, and to coordinate that research in an effective manner. A rare metals subcommittee was established in 1988. The council consists of approximately 300 researchers from 16 research laboratories who are conducting various research on unused resources, and resource extraction, utilization, and recycling. In FY92, the council plans to field trips, lectures, seminars, and general meetings.



Organizational Chart of Research Promotion Councils

Listing of Public Research Organizations

| District | No. | Local affiliate | Organization |
|----------|-----|-----------------|--|
| Hokkaido | 101 | Hokkaido Pref | Hokkaido Pref Industrial Research Institute |
| | 102 | Hokkaido Pref | Hokkaido Pref Forestry Research Laboratory |
| | 103 | Hokkaido Pref | Hokkaido Pref Underground Resources Research Institute |
| | 104 | Hokkaido Pref | Hokkaido Pref Cold Region Urban Research Institute |
| | 105 | Hokkaido Pref | Hokkaido Environmental Science Research Center |
| | 106 | Hokkaido Pref | Hokkaido Pref Industrial Technology Center |
| | 107 | Asahikawa City | Asahikawa Industrial Science and Technology Center |
| | 108 | Asahikawa City | Asahikawa Industrial Arts Center |
| | 109 | Kitami City | Kitami Industrial Science and Technology Center |
| | | | |
| Tohoku | 201 | Aomori Pref | Aomori Industrial Research Institute |
| | 202 | Aomori Pref | Aomori Industrial Research Institute, Aomori Woodworking Institute and Aomori Industrial Technology Development Center |
| | 203 | Aomori Pref | Aomori Machinery and Metals Research Institute |
| | 204 | Aomori Pref | Aomori Marine Products Processing Research Institute |
| | 205 | Iwate Pref | Iwate Industrial Research Institute |
| | 206 | Iwate pref | Iwate Brewing and Foodstuff Research Laboratory |
| | 207 | Iwate Pref | Iwate Fisheries Research Laboratory |
| | 208 | Akita Pref | Akita Industrial Technology Center |
| | 209 | Akita Pref | Akita Brewing Research Laboratory |
| | 210 | Akita Pref | Akita Environmental Technology Center |
| | 211 | Inawashiro City | Inawashiro Technology Development Center |
| | 212 | Yamagata Pref | Yamagata Industrial Research Institute |
| | 213 | Miyagi Pref | Miyagi Industrial Research Institute |
| | 214 | Fukushima Pref | Fukushima Industrial Research Lab, Fukushima |
| | 215 | Fukushima Pref | Fukushima Industrial Research Lab, Aizuwakamatsu |
| | 216 | Fukushima Pref | Fukushima Industrial Research Lab, Iwaki |
| Kanto | 301 | Ibaragi Pref | Ibaragi Industrial Research Institute |
| | 302 | Tochigi Pref | Tochigi Industrial Technology Center |
| | 303 | Tochigi Pref | Tochigi Textile Research Laboratory |
| | 304 | Tochigi Pref | Tochigi Center for Commerce and Industry |
| | 305 | Tochigi Pref | Tochigi Tsumugi Textile Research Laboratory |
| | 306 | Tochigi Pref | Tochigi Food Products Research Laboratory |
| | 307 | Tochigi Pref | Tochigi Ceramics Research Institute |
| | 308 | Gunma Pref | Gunma Industrial Research Institute |
| | 309 | Gunma Pref | Gunma Textile Research Laboratory |
| | 310 | Gunma Pref | Gunma Agricultural Processing Center |
| | 311 | Saitama Pref | Saitama Mold and Machinery Research Laboratory |
| | 312 | Saitama Pref | Saitama Textile Research Laboratory |
| | 313 | Saitama Pref | Saitama Paper Manufacturing Research Laboratory |
| | 314 | Saitama Pref | Saitama Food Products Research Laboratory |
| | 315 | Saitama Pref | Saitama Industrial Technology Research Institute |
| | 316 | Saitama Pref | Saitama Horticulture Research Laboratory |
| | 317 | Saitama Pref | Saitama Environmental Pollution Center |
| | 318 | Chiba Pref | Chiba Industrial Research Institute |
| | 319 | Chiba Pref | Chiba Machinery and Metals Research Institute |
| | 320 | Chiba Pref | Chiba Agricultural Research Laboratory |
| | 321 | Tokyo Metro | Tokyo Municipal Industrial Research Institute |
| | 322 | Tokyo Metro | Tokyo Municipal Textile Research Laboratory |
| | 323 | Tokyo Metro | Tokyo Municipal General Isotope Research Institute |
| | 324 | Tokyo Metro | Tokyo Municipal Food Products Technology Center |
| | 325 | Tokyo Metro | Tokyo Municipal Leather Technology Center |
| | 326 | Tokyo Metro | Tokyo Municipal Livestock Research Laboratory |
| | 327 | Kanagawa Pref | Kanagawa Industrial Research Institute |
| | 328 | Kanagawa Pref | Kanagawa Industrial Arts Institute |
| | 329 | Kanagawa Pref | Kanagawa Textile Research Institute |
| | 330 | Kanagawa Pref | Kanagawa Furniture Research Center |
| | 331 | Kanagawa Pref | Kanagawa Agricultural General Research Institute |

[Continued]

[Continuation of Listing of Public Research Organizations Part 1-2]

| District | No. | Local affiliate | Organization |
|-------------------|-----|-----------------|---|
| Kanto [cont'd] | 332 | Yokohama City | Yokohama Center for Small and Medium Enterprises |
| | 333 | Niigata Pref | Niigata Industrial Research Institute |
| | 334 | Niigata Pref | Niigata Food Products Research Laboratory |
| | 335 | Niigata Pref | Niigata Brewing Research Laboratory |
| | 336 | Nagano Pref | Nagano Information Technology Research Institute |
| | 337 | Nagano Pref | Nagano Industrial Research Institute |
| | 338 | Nagano Pref | Nagano Precision Machinery Research Institute |
| | 339 | Nagano Pref | Nagano Food Products Research Institute |
| | 340 | Nagano Pref | Nagano General Forestry Information Center |
| | 341 | Yamanashi Pref | Yamanashi-Fuji Industrial Technology Center |
| | 342 | Yamanashi Pref | Yamanashi Industrial Technology Center |
| | 343 | Shizuoka Pref | Shizuoka Industrial Technology Center, Shizuoka |
| | 344 | Shizuoka Pref | Shizuoka Industrial Technology Center, Hamamatsu |
| | 345 | Shizuoka Pref | Shizuoka Industrial Technology Center, Fuji |
| | 346 | Shizuoka Pref | Shizuoka Industrial Technology Center, Numazu |
| | 347 | Shizuoka Pref | Shizuoka Design Center for Small-Medium Enterprises |
| | 348 | Shizuoka City | Shizuoka Center for New Industries |
| Chubu | 401 | Aichi Pref | Aichi Industrial Technology Center |
| | 402 | Aichi Pref | Aichi Food Products Research Center |
| | 403 | Aichi Pref | Aichi-Mikawa Fiber Research Center |
| | 404 | Aichi Pref | Aichi-Owari Fiber Research Center |
| | 405 | Aichi Pref | Aichi-Tokoname Ceramics Research Center |
| | 406 | Aichi Pref | Aichi-Seto Ceramics Research Center |
| | 407 | Aichi Pref | Aichi Environmental Pollution Investigation Center |
| | 408 | Nagoya City | Nagoya Industrial Research Institute |
| | 409 | Gifu Pref | Gifu Industrial Technology Center |
| | 410 | Gifu Pref | Gifu Textile Research Laboratory |
| | 411 | Gifu Pref | Gifu Metals Research Laboratory |
| | 412 | Gifu Pref | Gifu Paper Manufacturing Research Institute |
| | 413 | Gifu Pref | Gifu Ceramics Research Institute |
| | 414 | Gifu Pref | Gifu Industrial Arts Institute |
| | 415 | Gifu Pref | Gifu Forestry Center |
| | 416 | Tajimi City | Tajimi Ceramic Design Research Center |
| | 417 | Doki City | Doki Ceramics Research Laboratory |
| | 418 | Mizunami City | Mizunami Ceramics Research Laboratory |
| | 419 | Mie Pref | Mie Industrial Technology Center |
| | 420 | Mie Pref | Mie Metallurgical Research Laboratory |
| | 421 | Mie Pref | Mie Ceramics Research Laboratory |
| | 422 | Ise City | Ise Industrial Arts Institute |
| | 423 | Toyama Pref | Toyama Industrial Technology Center |
| | 424 | Toyama Pref | Toyama Forestry Research Center |
| | 425 | Toyama Pref | Toyama Pharmaceutical Research Institute |
| | 426 | Toyama Pref | Toyama Food Products Research Institute |
| | 427 | Takaoka City | Takaoka Industrial Arts Design Center |
| | 428 | Toyama City | Toyama Industrial Promotion Center |
| | 429 | Ishikawa City | Ishikawa Industrial Research Institute |
| | 430 | Ishikawa City | Ishikawa Kutani-Yaki Pottery Research Laboratory |
| | 431 | Ishikawa City | Ishikawa Forestry Research Laboratory, Ishikawa Wood Center |
| | 432 | Yamanaka Town | Yamanaka Lacquerware Research Institute |
| | 433 | Wajima City | Wajima Lacquerware Research Institute |

(Continued)

[Continuation of Listing of Public Research Organizations (Part 1-3)]

| District | No. | Local affiliate | Organization |
|-----------------|-----|-----------------|--|
| Kinki | 501 | Fukui Pref | Fukui Industrial Research Institute |
| | 502 | Fukui Pref | Fukui Research Institute for Processed Foods |
| | 503 | Takeo City | Takeo Industrial Research Institute |
| | 504 | Shiga Pref | Shiga Pref Machinery and Metals Research Institute |
| | 505 | Shiga Pref | Shiga Textile Information Center |
| | 506 | Shiga Pref | Shiga Shiragaki Ceramics Research Laboratory |
| | 507 | Shiga Pref | Shiga Industrial Research Institute |
| | 508 | Kyoto Pref | Kyoto Center for Small and Medium Enterprises |
| | 509 | Kyoto Pref | Kyoto Textile Information Center |
| | 510 | Kyoto City | Kyoto Industrial Research Institute |
| | 511 | Kyoto City | Kyoto Dyeing and Weaving Research Institute |
| | 512 | Nara Pref | Nara Industrial Research Institute |
| | 513 | Nara Pref | Nara Trade and Tourism Center |
| | 514 | Nara Pref | Nara Forestry Research Laboratory |
| | 515 | Nara Pref | Nara Pharmaceutical Information Center |
| | 516 | Osaka Pref | Osaka Pref Industrial Technology and General Research Center |
| | 517 | Osaka Pref | Osaka Pref Central Industrial Design & Research Center |
| | 518 | Osaka City | Osaka Pref Industrial Research Institute |
| | 519 | Osaka City | Osaka Pref Environmental Science Research Institute |
| | 520 | Hyogo Pref | Hyogo Pref Industrial Technology Center |
| | 521 | Hyogo Pref | Hyogo Pref Environmental Pollution Research Institute |
| | 522 | Hyogo Pref | Hyogo Pref Central Agricultural Research Center |
| | 523 | Wakayama Pref | Wakayama Industrial Technology Center |
| | 524 | Wakayama Pref | Wakayama Lacquerware Research Laboratory |
| Chugoku | 601 | Tottori Pref | Tottori Industrial Research Institute |
| | 602 | Tottori Pref | Tottori Research Institute for Processed Foods |
| | 603 | Shimane Pref | Shimane Pref Industrial Technology Center |
| | 604 | Okayama Pref | Okayama Industrial Technology Center |
| | 605 | Hiroshima Pref | Hiroshima Pref W. Industrial Technology Center |
| | 606 | Hiroshima Pref | Hiroshima Pref E. Industrial Technology Center |
| | 607 | Hiroshima Pref | Hiroshima Pref Industrial Food Technology Center |
| | 608 | Hiroshima City | Hiroshima Industrial Technology Center |
| | 609 | Yamaguchi Pref | Yamaguchi Industrial Technology Center |
| Shikoku (12) | 701 | Tokushima Pref | Tokushima Pref Industrial Technology Center |
| | 702 | Tokushima Pref | Tokushima Environmental Preservation Center |
| | 703 | Tokushima City | Tokushima Woodworking Center |
| | 704 | Kagawa Pref | Kagawa Food Research Laboratory |
| | 705 | Kagawa Pref | Kagawa Fermented Foods Research Laboratory |
| | 706 | Kagawa Pref | Kagawa Industrial Technology Center |
| | 707 | Ehime Pref | Ehime Industrial Technology Center |
| | 708 | Ehime Pref | Ehime Paper Manufacturing Research Laboratory |
| | 709 | Ehime Pref | Ehime Ceramics Research Laboratory |
| | 710 | Niihama City | Ehime Research Laboratory for Textile Industry |
| | 711 | Kochi Pref | Niihama Municipal Industrial Research Institute |
| | 712 | Kochi Pref | Kochi Industrial Technology Center |
| | | | Kochi Paper Manufacturing Research Laboratory |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 1-4)]

| District | No. | Local affiliate | Organization |
|----------------|-----|-----------------|--|
| Kyushu (18) | 801 | Fukuoka Pref | Fukuoka Industrial Technology Center |
| | | Fukuoka Pref | Fukuoka Industrial Technology Center, Chemical Fiber Research Laboratory |
| | | Fukuoka Pref | Fukuoka Industrial Technology Center, Materials Development Research Laboratory |
| | | Fukuoka Pref | Fukuoka Industrial Technology Center, Interior Research Laboratory |
| | | Fukuoka Pref | Fukuoka Industrial Technology Center, Machinery and Electronics Research Laboratory |
| | 802 | Fukuoka Pref | Fukuoka General Agricultural Research Institute, Chikugo Laboratory |
| | 803 | Saga Pref | Saga Industrial Research Institute |
| | 804 | Saga Pref | Saga Ceramics Research Laboratory |
| | 805 | Nagasaki Pref | Nagasaki Industrial Technology Center |
| | 806 | Nagasaki Pref | Nagasaki Ceramics Research Laboratory |
| | 807 | Kumamoto Pref | Kumamoto Industrial Technology Center |
| | 808 | Kumamoto Pref | Kumamoto Processed Foods Research Laboratory |
| | 809 | Oita Pref | Oita Industrial Research Institute |
| | 810 | Oita Pref | Oita Industrial Arts Institute, Hita |
| | 811 | Oita Pref | Oita Industrial Arts Institute, Beppu |
| | 812 | Beppu City | Beppu Industrial Arts Research Institute |
| | 813 | Oita Pref | Oita Pref Industrial Technology Research Exchange Center |
| | 814 | Miyazaki Pref | Miyazaki Industrial Research Institute |
| | 815 | Miyazaki Pref | Miyazaki Food Products R&D Center |
| | 816 | Kagoshima Pref | Kagoshima Industrial Technology Center |
| | 817 | Kagoshima Pref | Kagoshima Agricultural Products Processing Research and Information Center |
| | 818 | Kagoshima Pref | Kagoshima Oshima Tsumugi Research and Information Center |
| Okinawa (2) | 819 | | Okinawa Industrial Research Institute |
| | 820 | | Okinawa Industrial Arts Institute |

Listing of Public Research Organizations (Part 2-1)

| (No. from Part 1) | Address | Telephone |
|-------------------|--|--------------|
| 101 | 11-Block 19th Ave., Kita-ku, Sapporo City, T060 | 011(747)2211 |
| 102 | 1-10-174-7 Nishi Kagura, Asahikawa City, T071-01 | 0166(75)4233 |
| 103 | 12-Block 19th Ave., Kita-ku, Sapporo City, T060 | 011(747)2211 |
| 104 | 1-3-36 4th Ave., Bldg 24, Sapporo City, T063 | 011(621)4211 |
| 105 | 12-Block 19th Ave., Kita-ku, Sapporo City, T060 | 011(747)2211 |
| 106 | 379 Kikyo-machi, Hakodate City, T041 | 0138(47)3615 |
| 107 | 34-11 Hinode, E. Asahikawa-machi, Asahikawa, T078 | 0166(36)3111 |
| 108 | 3-5-11 3rd Ave., Toyooka, Asahikawa City, T078 | 0166(32)1231 |
| 109 | 1-4 Miwa, Kitami City, T090 | 0157(31)2705 |
| 201 | 80 Fukuro-machi, Hirosaki City, T036 | 0172(32)1466 |
| 202 | 202-4 Oaza Yatsuyakuji Ashiya, Aomori City, T030-01 | 0177(39)8551 |
| 203 | 202-4 Oaza Yatsuyakuji Ashiya, Aomori City, T030-01 | 0177(39)9676 |
| 204 | 4-7-8 Numadate, Hachinohe City, T031 | 0178(22)4336 |
| 205 | 2-10 Chikko-machi, Hachinohe City, T031 | 0178(33)1347 |
| 206 | 26 Tsushima, Tonami-mura, Shiba-gun, Iwate T020 | 0196(36)3640 |
| 207 | 26 Tsushima, Tonami-mura, Shiba-gun, Iwate T020 | 0196(35)4130 |
| 208 | 1-4-21 Niihama-cho, Kamaishi City, T026 | 0193(24)2111 |
| 209 | 4-11 Aza Sanuki Shinya-machi, Akita City, T010-16 | 0188(62)3414 |
| 210 | 47 Aza Ebisugawara, Yatsuhashi, Akita City, T010 | 0188(62)4285 |
| 211 | 191-18 Aza Shimo, Yatsuhashi, Akita City, T010 | 0188(63)1425 |
| 212 | 18-19 Aza Minami Nishiyama, Inawashiro City, T016-01 | 0185(52)5249 |
| 213 | 683 Aza Kuruma-no-mae, Numaki, Yamagata City, T990 | 0236(44)3222 |
| 214 | 8-7-20 Nagamachi, Taihaku-ku, Sendai City, T982 | 022(248)4386 |
| 215 | 1-3 Shimoaza-Funokawa, Fukushima City, T960-21 | 0245(93)1121 |
| 216 | 651-1 Aza Muranishi, Aizuwakamatsu City, T965 | 0242(27)0834 |
| | 23-32 Aza Kodosaku, Shimofunao-cho, Iwaki, T972 | 0246(44)1475 |
| 301 | 3781-1 Yato Nagao, Ibaragi-cho, Ibaragi, T311-31 | 0292(93)7212 |
| 302 | 516-1 Shirokuwada, Kanuma City, T322 | 0289(62)5211 |
| 303 | 2870 Nishinomiya-cho, Ashikaga City, T326 | 0284(21)2138 |
| 304 | 950 Tenjin-cho, Sano city, T327 | 0283(22)0733 |
| 305 | 2358 Fukura, Koyama City, T307-02 | 0285(49)0009 |
| 306 | 508 Ichinoseawa-cho, Utsunomiya City, T320 | 0286(48)5471 |
| 307 | 695 Mashiko, Mashiko-cho, Haga-gun, Tochigi, T321-42 | 02857(2)5221 |
| 308 | 190 Shimaba-cho, Mashashi City, T371 | 0272(51)4261 |
| 309 | 5-46-1 Socho, Kiryu City, T376 | 0277(52)9950 |
| 310 | 1085 Egi-cho, Mashashi City T371 | 0272(69)4171 |
| 311 | 1-1-56 Shibashita, Kawaguchi City T333 | 0482(65)1311 |
| 312 | 7-29 Muko-machi, Gyoda City T361 | 0485(55)2301 |
| 313 | 226 Ogawa, Ogawa-cho, Hiki-gun, Saitama, T355-03 | 0493(72)0222 |
| 314 | 2-133 Sushiro, Kumagai City, 360 | 0485(21)0614 |
| 315 | 3-10-1 Kizaki, Urawa City, T338 | 048(833)1511 |
| 316 | 91 Rokumanbe, Kuki City, T346 | 0480(21)1113 |
| 317 | 639-1 Kami Okubo, Urawa City, T338 | 048(853)6111 |
| 318 | 889 Kasori-cho, Chiba City, T28 | 0472(31)4325 |
| 319 | 6-13-1 Tendai-cho, Chiba City, T260 | 0472(52)2101 |
| 320 | 808 Ozennno-cho, Chiba City, T280-02 | 0472(91)0151 |
| 321 | 3-13-10 Nishi-ga-oka Kita-ku, Tokyo, T115 | 03(3909)2151 |
| 322 | 3-19-1 Myoshin-cho, Hachioji City, T192 | 0426(42)7175 |
| 323 | 2-11-1 Fukezawa, Setagaya-ku, Tokyo, T158 | 03(3702)3111 |
| 324 | 1-8 Sakuma-cho, Kanda, Chiyoda-ku, Tokyo, T101 | 03(5256)9251 |
| 325 | 3-3-14 E. Sumida, Sumida-ku, Tokyo, T131 | 03(3616)1671 |
| 326 | 715 Shirumachi, Ome-shi, Tokyo, T198 | 0428(31)2171 |
| 327 | 3173 Showa-cho, Kanazawa-ku, Yokohama City, T236 | 045(771)1301 |
| 328 | 1-7-53 Honmachi, Odawara City, T250 | 0465(22)4168 |
| 329 | 4408 Hanbara, Ako-cho, Ako-gun, Kanagawa, T243-03 | 0462(81)1132 |
| 330 | 896-5 Sugikubo, Ebina City, T243-04 | 0462938)3031 |
| 331 | 496 Teradanawa, Hiratsuka City, T259-12 | 0463(58)0333 |

(Continued)

[Continuation of Listing of Public Research Organizations (Part 2-2)]

| [No. from Part 1) | Address | Telephone |
|-------------------|--|--------------|
| 332 | Asahi Kaikan 6F, 15 Nippon Odori, Yokohama C., T231 | 045(662)6631 |
| 333 | 1-11-1 Kabuto Nishi, Matsumoto City, T950 | 025(247)1301 |
| 334 | 2-25 Shinsakae-machi, Kamo City, T959-13 | 0258(52)0448 |
| 335 | 2-5932-133 Suido-cho, Niigata City, T951 | 025(222)4568 |
| 336 | 1-7-7 Nomizo-nishi Matsumoto City, T399 | 0266(23)4000 |
| 337 | 188 Wakazato, Nagano City, T380 | 0263(25)0780 |
| 338 | 9959 Okaya City, T394 | 0262(26)2812 |
| 339 | 205-1 Aza Nishibana, Oaza Kurita, Nagano City, T380 | 0262(27)3131 |
| 340 | 5739 Oaza Kataoka, Shiojiri City, T399-07 | 0263(52)0600 |
| 341 | 2095 Shimoyoshida, Fujiyoshida City, T403 | 0555(22)2100 |
| 342 | 3-9-4 Satoyoshi, Kofu City, T400 | 0552(33)0211 |
| 343 | 550 Maki-ga-ya, Shizuoka City, T421-12 | 0542(78)3023 |
| 344 | 8950 Toda-cho, Hamamatsu City, 431-21 | 053(428)4151 |
| 345 | 2590-1 Obuchi, Fuji City, T417 | 0545(35)5190 |
| 346 | 3981-1 O-oka, Numazu City, T410 | 0559(25)1100 |
| 347 | 44-1 Otamachi, Shizuoka City, T420 | 054(273)4335 |
| 348 | 2992 Nakajima, Shizuoka City, T422 | 0542(81)2100 |
| 401 | Nishi Shinwari, Hitotsuki-cho, Kaya City, T448 | 0566(24)1841 |
| 402 | 2-1-1 Shinfukutera-machi, Nishi-ku, Nagoya T451 | 052(521)9316 |
| 403 | 109 Igakubo, Otsuka-cho, Gamagori City T443 | 0533(59)7146 |
| 404 | 35 Aza Miyaura, Yamato-cho, Ichinomiya City T491 | 0588(45)7871 |
| 405 | 4-50 Oso-cho, Tokoname City, T479 | 05693(5)5151 |
| 406 | 537 S. Yamaguchi-cho, Seto City, T489 | 0561(21)2116 |
| 407 | 7-6 Aza Nagare, Tsuji-machi, Kita-ku, Nagoya T462 | 052(911)3111 |
| 408 | 6-3-4-41 Atsuta-ku, Nagoya City, T456 | 052(661)3161 |
| 409 | 47 N. Oyobi, Kasamatsu-cho, Hashima, Gifu, T501-61 | 05838(8)3151 |
| 410 | 47 N. Oyobi, Kasamatsu-cho, Hashima, Gifu, T501-61 | 05838(8)3151 |
| 411 | 1288 Kose, Saki City, T501-32 | 0575(22)0147 |
| 412 | 777 Maeno, Mino City, T501-37 | 0575(33)1241 |
| 413 | 3-11 Hoshigadai, Tajima City, Y507 | 0572(22)5381 |
| 414 | 1554 Yamada-cho, Takeyama City, T506 | 0577(33)5252 |
| 415 | 1128-1 Soyo, Mino City, T501-37 | 0575(33)2585 |
| 416 | 2-77 Misaka-cho, Tajima City, T507 | 0572(22)4731 |
| 417 | 1556-2 Dachi-machi, Doki City, T509-54 | 0572(59)8312 |
| 418 | 5-5-1 Kamihira-cho, Mizura City, T509-61 | 0572(68)2111 |
| 419 | 3485 Aza Otsuka, Komori, Takachaya, Tsu City, T514 | 0592(34)4036 |
| 420 | 208 Aza Nishiyama, Oazashichi, Kuwana City, T511 | 0594(31)0300 |
| 421 | 788 Higashi Akuragawa, Yokkaichi City, T510 | 0593(31)2381 |
| 422 | 5-14-43 Ichi-no-ki, Ise City, T516 | 0598(28)4397 |
| 423 | 150 Nikami-cho, Takaoka City, T933 | 0766(21)2121 |
| 424 | 4940 Kurakawashin, Kosugi-cho, Toyama, T939-03 | 0766(56)2815 |
| 425 | 17-1 Naka Taikoyama, Kosugi-cho, Toyama, T939-03 | 0766(56)6026 |
| 426 | 360 Yoshioka, Toyama City, T939 | 0764(29)5400 |
| 427 | Chiiki Jiba Sangyo Center 4F, 1-1 Kaihatsu Honmachi, Takaoka City, T933 | 0766(22)2317 |
| 428 | 2-10 Otemachi, Toyama City, T930 | 0764(93)4888 |
| 429 | Ro-1 Tomizu-cho, Kanazawa City, Y920-20 | 0762(67)8080 |
| 430 | Ha-21-3 Shorenji-cho, Komatsu City, T923-01 | 0761(47)3631 |
| 431 | 73-1 Aza Yoshioka Higashi, Kawachi-mura, Ishikawa-gun, Ishikawa, T920-23 | 07619(3)1873 |
| 432 | I-102 Tsukaya-cho, Yamanaka-machi, Ishikawa, T920-01 | 07617(8)0425 |
| 433 | 24-55 Kawai-machi, Nagahama City, T(28 | 0768(22)2211 |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 2-3)]

| [No. from part 1] | Address | Telephone |
|-------------------|--|------------------------------|
| 501 | 10 Aza N. Inada, 61 Kawai Washizuka-cho, Fukui, T910 | 0766(55)0664 |
| 502 | 1-1 Aza Ogawara, Tsubo-no-uchi, Maruoka-cho, Sakai-gun, Fukui, T910-02 | 0766(61)3539 |
| 503 | 49-6 Ikenoue-cho, Takeo City, Fukui, T915 | 0778(22)1241 |
| 504 | 52 Oka-machi, Hikone City, T522 | 0749(22)2325 |
| 505 | 27-39 Mitsuya Motomachi, Nagahama City, T526 | 0749(62)1492 |
| 506 | 498 Nagano, Shigaraki-cho, Koga-gun, Shiga, T528-18 | 0748(82)1155 |
| 507 | 232 Kamitoyama, Ritto-cho, Kurita, Shiga, T520-30 | 0775(58)1500 |
| 508 | 17 Minami-machi, Chudo-ji, Shimogyo-ku, Kyoto, T600 | 075(315)2811 |
| 509 | 139-1 Aza Tanba, Mineyama-cho, Naka-gun, Kyoto, T627 | 0772(62)0074 |
| 510 | 17 Minami-machi, Chudo-ji, Shimogyo-ku, Kyoto, T600 | 075(311)3171 |
| 511 | 647-20 Sokoku-ji Monzen-cho, Kamidachiuri Agaru, Karasuma-dori, Kamigyo-ku, Kyoto, T602 | 075(441)3165 |
| 512 | 129-1, Kashiwagi-cho, Nara City, T630 | 0742(33)0817 |
| 513 | 38-1 Noborioji-cho, Nara City, T630 | 0742(22)6601 |
| 514 | Kibi, Takatori-cho, Takeichi-gun, Nara, T635-01 | 0744(52)2380 |
| 515 | 605-10 Goshio City, T639-22 | 0745(2)2376 |
| 516 | 2-1-53 Enoshima, Nishi-ku, Osaka, T550 | 06(443)1121 |
| 517 | Osaka Shoko Kaikan, 4-3-6 Minami Honmachi, Chuo-ku, Osaka, T541 22-28, Asahi-machi, Izumi Otsu City, T595 | 06(291)0327 0725(33)8810 |
| 518 | 1-6-50 Morinomiya, Joto-ku, Osaka T536 | 06(969)1031 |
| 519 | 8-34 Higashi Ue-machi, Tennoji-ku, Osaka, T543 | 06(771)8331 |
| 520 | 3-1-12 Yukihira-cho, Suma-ku, Kobe City, T654 | 078(731)4481 |
| 521 | 3-1-27 Yukihira-cho, Suma-ku, Kobe City, T654 | 078(731)6911 |
| 522 | Ko-1533, Minami-no-oka, Beppu-cho, Kasai C., T679-01 | 0790(7)1117 |
| 523 | 60 Ogura, Wakayama City, T649-62 | 0734(77)1271 |
| 524 | 226-2 Funao, Kainan City, T642 | 07348(2)0844 |
| 601 | 390 Akisato, Tottori City, T680 | 0857(22)8321 |
| 602 | 2032-1 Nakano-cho, Sakaiminato City, T684 | 0859(44)6121 |
| 603 | 219 Izumokyo, Izumo-cho, Yotsuka, Shimane, T699-01 | 0852(52)4480 |
| 604 | 4-3-18 Ifuku-cho, Okayama City, T700 | 0862(52)5136 |
| 605 | 3-6-21 Chuo, Kure City, T737 | 0823(21)6438 |
| 606 | 3-232-6 Fukatsu-cho, Fukuyama city, T721 | 0849(31)2400 |
| 607 | 12-70 Honmachi, Hijiyama, S. Ward, Hiroshima, T732 | 082(251)7431 |
| 608 | 3-8-24 Senda-cho, Naka-ku, Hiroshima, T730 | 082(242)4170 |
| 609 | 585-1 Aza Yugaki, Oaza Asada, Yamaguchi City, T753 | 0839(22)6810 |
| 701 | 11-2 Nishihiraki, Saiga-cho, Tokushima City, T770 | 0886(69)4711 |
| 702 | 5-71 Mandai-cho, Tokushima City, T770 | 0886(25)7751 |
| 703 | 1-8-22 Fukushima, Tokushima city, T770 | 0886(22)9625- |
| 704 | 587-1 Goto-cho, Takamatsu City, T761 1358-1 Inawa-ko, Uchiiumi-cho, Shodoshima-gun, Kagawa, T761-44 | 0878(82)9481 0879(82)0034 |
| 705 | 587-1 Goto-cho, Takamatsu City, T761 | 0878(81)3175 |
| 706 | 487-2 Kumeogita-cho, Matsuyama City, T790 | 0899(76)7612 |
| 707 | 281-2 Kawano-cho, Kawano City, T799-01 | 0896(58)2144 |
| 708 | 2 Gohonmatsu, Tobe-cho, Iyo-gun, Ehime, T791-21 | 0899(62)2076 |
| 709 | 2-5-48 Higashimura Minami, Imabari City, T799-15 | 0890(48)0021 |
| 710 | 142-1 Takihama, Niihama City, T792 | 0897(45)2329 |
| 711 | 3992-3 Fushida, Kochi City, T781-51 | 0888(46)1111 |
| 712 | 3-115 Asahi-machi, Kochi City, T780 | 0888(24)4151 |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 2-4)]

| [No. from part 1] | Address | Telephone |
|-------------------|---|--|
| 801 | 332-1 Oaza Kamikoga, Tsukushino City, T818 332-1 Oaza Kamikoga, Tsukushino City, T818 499 Oaza Inatomi, Yatome City, T834 405-3 Aza Hatanaka Higashi, Oaza Kamimaki, Okawa City, T831 3-6-1 Norimatsu Yahatanishi-ku, Kitakyushu City, T807 | 092(925)7721 092(925)7721 0943(23)2361 0944(86)3259 093(691)0260 |
| 802 | 1003 Muta, Hachi-machi, Oki-cho, Mitsuma-gun, Fukuoka, T830-04 | 0944(32)1029 |
| 803 | 114 Yatmizo, Nabeshima-cho, Saga, T849 | 0952(30)8161 |
| 804 | 3100-5-Otsu, Aza Tanohira, Chubu, Arita-cho, Nishi Matsuura-gun, Saga, T844 | 0955(43)2185 |
| 805 | 1303-8, 2-Chome, Ikeda, Omura City, T856 | 0957(52)1133 |
| 806 | 2240 Iishigo, Nasami-cho, Higashisonogi-gun, Nagasaki, T859-37 | 0956(85)3140 |
| 807 | 3-11 Higashi-machi, Kumamoto City, T862 | 096(368)2101 |
| 808 | 3-11 Higashi-machi, Kumamoto City, T862 | 096(368)3600 |
| 809 | 3239-4 Oaza Shimogori, Oita City, T870 | 0975(69)1855 |
| 810 | 3 Ishii-cho, Hita City, T877 | 0973)23)2213 |
| 811 | 3-3 Higashi Soen-cho, Beppu City, T874 | 0977(22)0208 |
| 812 | 7-14 Suehiro-cho-cho, Beppu City, T874 | 0977(23)1072 |
| 813 | 1977-1 Oaza Nahahanda, Oita City, T879-76 | 0975(97)6406 |
| 814 | 1-7-14 Tsunehisa, Miyazaki City, T880 | 0985(51)7211 |
| 815 | 1-7-14 Tsunehisa, Miyazaki City, T880 | 0985(50)1488 |
| 816 | 1445-1 Oda, Hayato-cho, Aira-gun, Kagoshima, T899-51 | 0995(43)5111 |
| 817 | 5500 Kamifukumoto-machi, Kagoshima City, T 891-01 | 0992(68)9325 |
| 818 | 888 Urakami, Naze City, T894 | 0997(52)0088 |
| 819 | 1-8-39 Kimiya, Naha City, T902 | 098(832)2178 |
| 820 | 213 Aza Shoya, Nanpuhara-machi, Okinawa, T901-11 | 098(889)1186 |

Listing of Public Research Organizations (Part 3-1)

| Organization | Director | Staff | RESEARCH AREAS |
|--|--|---|---|
| Hokkaido Pref Industrial Research Institute Hokkaido Pref Forestry Research Laboratory Hokkaido Pref Underground Resources Research Inst. Hokkaido Pref Cold Region Urban Research Institute Hokkaido Environmental Science Research Center Hokkaido Pref Industrial Technology Center Asahikawa Industrial Science and Technology Center Asahikawa Industrial Arts Institute Kitami Industrial Science and Technology Center | T. Maruyama H. Nakagawa F. Hayakawa T. Furuya K. Hirano O. Sato A. Kato S. Nakajima J. Oishi | 122 162 42 53 48 25 8 26 9 | M,Me,Ch,I,Ce,B,F,Mi,El Ch,I Ch,Mi Cn,Ce Ep M,Me,Ch,El,F M,Me I,Ce M,Me,I |
| Aomori Industrial Research Institute Aomori Industrial Research Institute, Aomori Wood-working Institute and Aomori Industrial Technology Development Center Aomori Machinery and Metals Research Institute Aomori Marine Products Processing Research Institute Iwate Industrial Research Institute Iwate Brewing and Foodstuff Research Laboratory Iwate Fisheries Research Laboratory Akita Industrial Technology Center Akita Brewing Research Laboratory Akita Environmental Technology Center Inawashiro Technology Development Center Yamagata Industrial Research Institute Miyagi Industrial Research Institute Fukushima Industrial Research Lab, Fukushima Fukushima Industrial Research Lab, Aizuwakamatsu Fukushima Industrial Research Lab, Iwaki | Y. Mochizuki K. Fukuta F. Shinogi H. Amauchi M. Akaba T. Okada K. Yamazaki S. Shibui S. Kadowaki T. Samuta T. Hasegawa K. Otaka R. Tamiya K. Saito K. Sakai H. Kimura N. Kanno | 30 15 22 14 30 40 15 42 59 16 23 5 104 43 37 31 11 | Ch,I,Ce,B,F I M,Ch,El,B M,Me,Ch F M,Me,Ch,I,Ce,El,Ep B,F F (processed) M,Me,Ch,Ce,EP,El,Cn B,F Ep I M,Me,El,Ch,I,Ce,B,F M,Me,Ch,I,Ce,El,B,Ep M,Me,El,Ch,Ce I,Ce,B,F,P M,Me,Ch |
| Ibaragi Industrial Research Institute Tochigi Industrial Technology Center Tochigi Textile Research Laboratory Tochigi Center for Commerce and Industry Tochigi Tsumugi Textile Research Laboratory Tochigi Food Products Research Laboratory Tochigi Ceramics Research Institute Gunma Industrial Research Institute Gunma Textile Research Laboratory Gunma Agricultural Processing Center Saitama Mold and Machinery Research Laboratory Saitama Textile Research Laboratory Saitama Paper Manufacturing Research Laboratory Saitama Food Products Research Laboratory Saitama Industrial Technology Research Institute Saitama Horticulture Research Laboratory Saitama Environmental Pollution Center Chiba Industrial Research Institute Chiba Machinery and Metals Research Institute Chiba Agricultural Research Laboratory Tokyo Municipal Industrial Research Institute Tokyo Municipal Textile Research Laboratory Tokyo Municipal General Isotope Research Institute Tokyo Municipal Food Products Technology Center Tokyo Municipal Leather Technology Center Tokyo Municipal Livestock Research Laboratory Kanagawa Industrial Research Institute Kanagawa Industrial Arts Institute Kanagawa Textile Research Institute Kanagawa Furniture Research Center Kanagawa Agricultural General Research Institute | T. Dan T. Kumata I. Onachi K. Watanabe H. Iwano K. Umeyama R. Takano T. Kobe T. Miyashita T. Takehashi T. Sasahara H. Susa H. Tenkai T. Yatsumori S. Kurosu C. Murai H. Shuto T. Fukawa K. Sakane N. Otsuna T. Yonejima N. Hirakuri M. Ikeda A. Watanabe H. Okamura T. Nakajima T. Morimitsu C. Nagamatsu T. Tobe H. Ugawa N. Tsurashima | 72 33 23 22 9 16 10 50 30 8 34 42 7 17 36 61 40 32 40 181 203 84 68 20 14 77 196 19 13 9 65 | M,Me,I,El,Ch,B,Ce,T,F M,Me,I,El I M,Me,Ch,T T B,F Ce M,El,Me,Ch,I,B,F T F M,Me T P B,F I,Ch,El,Ce Pk Ep I,B,F,R,El M,Me,El F I,M,Me,El,Ch T Ra F L Ch,F M,Me,Ch,I,El,Ra I T I F |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 3-2)]

| Organization | Director | Staff | Research areas |
|---|---------------|-------|-----------------------|
| Yokohama Center for Small and Medium Enterprises | G. Yanagizawa | 39 | Me,Ch,I |
| Niigata Industrial Research Institute | A. Yoshida | 107 | M,Me,Ch,T,Mfg,El,Ce |
| Niigata Food Products Research Laboratory | S. Imai | 19 | B,F |
| Niigata Brewing Research Laboratory | I. Suzuki | 6 | B |
| Nagano Information Technology Research Institute | H. Ozaki | 39 | T,In,Me |
| Nagano Industrial Research Institute | K. Wada | 36 | M,Me,Ch,I |
| Nagano Precision Machinery Research Institute | K. Okubo | 43 | M,Ch,El |
| Nagano Food Products Research Institute | K. Yoshida | 23 | B,F,Pk,Ch |
| Nagano General Forestry Information Center | H. Watanabe | 26 | I |
| Yamanashi-Fuji Industrial Technology Center | A. Wada | 25 | T,M,El |
| Yamanashi Industrial Technology Center | E. Nakamura | 70 | T,M,I,Me,B,F |
| Shizuoka Industrial Technology Center, Shizuoka | H. Nakatsuka | 68 | M,Me,Ch,I,B,El,F |
| Shizuoka Industrial Technology Center, Hamamatsu | K. Furuhashi | 47 | T,M,Me,Ch,El |
| Shizuoka Industrial Technology Center, Fuji | H. Washiyama | 23 | P,El,M |
| Shizuoka Industrial Technology Center, Numazu | K. Kubojima | 18 | M,Me,Ch,El |
| Shizuoka Design Center for Small-Medium Enterprises | A. Kamoshida | 5 | D |
| Shizuoka Center for New Industries | H. Umino | 25 | I |
| Aichi Industrial Technology Center | S. Fujii | 66 | M,Me,Ch,I,Pk |
| Aichi Food Products Research Center | I. Tokumura | 47 | B,F |
| Aichi-Mikawa Fiber Research Center | K. Sawada | 35 | I |
| Aichi-Owari Fiber Research Center | M. Yazawa | 45 | I |
| Aichi-Tokoname Ceramics Research Center | I. Morikawa | 26 | Co |
| Aichi-Seto Ceramics Research Center | H. Inoue | 25 | Co |
| Aichi Environmental Pollution Investigation Center | O. Naruse | 64 | Ep |
| Nagoya Industrial Research Institute | S. Imai | 109 | M,Me,Ch,Co,El |
| Gifu Industrial Technology Center | S. Kishigami | 37 | Ch,F,B,El |
| Gifu Textile Research Laboratory | K. Satake | 24 | I |
| Gifu Metals Research Laboratory | H. Sekiya | 20 | M,Me,Ch,El |
| Gifu Paper Manufacturing Research Institute | T. Yokota | 15 | P |
| Gifu Ceramics Research Institute | I. Murase | 27 | Co |
| Gifu Industrial Arts Institute | S. Watanabe | 17 | Mfg |
| Gifu Forestry Center | S. Nonoda | 34 | I |
| Tajimi Ceramic Design Research Center | N. Mizuno | 25 | Co |
| Doki Ceramics Research Laboratory | S. Yamashita | 12 | Co |
| Mizunami Ceramics Research Laboratory | H. Ito | 11 | Co |
| Mie Industrial Technology Center | K. Hayashi | 52 | Ch,T,I,M,F,B,Me,El,Ep |
| Mie Metallurgical Research Laboratory | M. Kawabata | 12 | Me |
| Mie Ceramics Research Laboratory | M. Nishida | 19 | Co |
| Ise Industrial Arts Institute | M. Sakata | 7 | Ch,I |
| Toyama Industrial Technology Center | T. Yamamoto | 73 | M,Me,Ch,I,Co,El,T |
| Toyama Forestry Research Center | R. Karazawa | 37 | Mf |
| Toyama Pharmaceutical Research Institute | H. Saito | 18 | Ph |
| Toyama Food Products Research Institute | M. Horii | 19 | F |
| Takaoka Industrial Arts Design Center | M. Hori | 6 | D |
| Toyama Industrial Promotion Center | T. Koizumi | 5 | I |
| Ishikawa Industrial Research Institute | T. Ishida | 94 | M,Me,Ch,T,Mfg,Co,F,El |
| Ishikawa Kutani-Yaki Pottery Research Laboratory | T. Nakata | 9 | Co |
| Ishikawa Forestry Research Laboratory | S. Sanbayashi | 3 | I |
| Ishikawa Wood Center | M. Tanaka | 3 | I |
| Yamanaka Lacquerware Research Institute | T. Kato | 3 | I |
| Wajima Lacquerware Research Institute | | | |

(Continued)

[Continuation of Listing of Public Research Organizations (Part 3-3)]

| Organization | Director | Staff | Research areas |
|--|--------------|-------|--------------------------|
| Fukui Industrial Research Institute | H. Nishino | 97 | M,Me,Ch,I,T,Ce,El |
| Fukui Research Institute for Processed Foods | T. Nakamura | 16 | F |
| Takeo Industrial Research Institute | T. Tanaka | 7 | M,I,Me |
| Shiga Pref Machinery and Metals Research Institute | N. Ueda | 9 | M,Me |
| Shiga Textile Information Center | M. Kobayashi | 21 | I |
| Shiga Shiragaki Ceramics Research Laboratory | Y. Imanishi | 16 | Ce |
| Shiga Industrial Research Institute | N. Hata | 25 | M,Me,Ch,I,F,El,D |
| Kyoto Center for Small and Medium Enterprises | O. Kobori | 85 | M,Me,Ch,I,F,El |
| Kyoto Textile Information Center | T. Nishimoto | 39 | I |
| Kyoto Industrial Research Institute | T. Kamon | 43 | Me,Ch,Mfg,Ce,B,El |
| Kyoto Dyeing and Weaving Research Institute | H. Yamada | 41 | T |
| Nara Industrial Research Institute | S. Hirota | 34 | M,Me,Ch,T,I,Ce,F |
| Nara Trade and Tourism Center | S. Otsuka | 10 | I |
| Nara Forestry Research Laboratory | Y. Nishigaki | 39 | I |
| Nara Pharmaceutical Information Center | Y. Ueda | 10 | |
| Osaka Pref Industrial Technology and General Research Center | S. Hata | 221 | Ph M,Me,Ch,Ce,El,T |
| Osaka Pref Central Industrial Design & Research Center | S. Imatake | 18 | D M,Me,Ch,T,Ce,El,F |
| Osaka Pref Industrial Research Institute | T. Hirashima | 121 | Ep,F |
| Osaka Pref Environmental Science Research Institute | M. Nagasawa | 122 | M,Me,Ch,T,I,Ce,Pk,F,L |
| Hyogo Pref Industrial Technology Center | M. Tsunodo | 121 | Ep |
| Hyogo Pref Environmental Pollution Research Inst. | M. Kobayashi | 45 | Mz,F |
| Hyogo Pref Central Agricultural Research Center | H. Yana | 216 | M,Me,Ch,T,W,B,F,L,In |
| Wakayama Industrial Technology Center | K. Yokoyama | 61 | M |
| Wakayama Lacquerware Research Laboratory | T. Nishihata | 11 | |
| Tottori Industrial Research Institute | K. Eguna | 38 | Me,P,T,Mf,Ce,B,M,El |
| Tottori Research Institute for Processed Foods | Y. Yamazaki | 15 | F |
| Shimane Pref Industrial Technology Center | H. Kanayama | 41 | M,Me,Ch,I,Ce,F,P,Mi,Ep,B |
| Okayama Industrial Technology Center | H. Takatani | 75 | M,Me,Ch,T,I,Ce,B,F |
| Hiroshima Pref W. Industrial Technology Center | I. Oshita | 48 | M,Me,Ch,Ce |
| Hiroshima Pref E. Industrial Technology Center | M. Takasaki | 52 | T,M,Me,El,D,I |
| Hiroshima Pref Industrial Food Technology Center | T. Misu | 37 | B,F |
| Hiroshima Industrial Technology Center | K. Taniguchi | 28 | M,Ch,I,Me,El |
| Yamaguchi Industrial Technology Center | Y. Inoki | 46 | M,Me,Ch,T,I,Ce,B,F,El,D |
| Tokushima Pref Industrial Technology Center | K. Ueda | 51 | M,Me,Ch,T,I,B,El,F,In,D |
| Tokushima Environmental Preservation Center | K. Kitamura | 49 | Ep,F,B |
| Tokushima Woodworking Center | T. Iitomi | 7 | I |
| Kagawa Food Research Laboratory | S. Shiota | 25 | B,F |
| Kagawa Fermented Foods Research Laboratory | M. Ogura | 25 | B,F |
| Kagawa Industrial Technology Center | H. Suezawa | 29 | M,Me,i,Ce,Ch,El |
| Ehime Industrial Technology Center | M. Ukita | 45 | Me,Ch,I,F,M,B,El |
| Ehime Paper Manufacturing Research Laboratory | Y. Bessho | 10 | P |
| Ehime Ceramics Research Laboratory | H. Sagawa | 7 | Ce |
| Ehime Research Laboratory for Textile Industry | S. Akutagawa | 20 | T |
| Niihama Municipal Industrial Research Institute | K. Kondo | 3 | |
| Kochi Industrial Technology Center | K. Tauchi | 37 | M,Me,Ch,I,Ce,F,In,D |
| Kochi Paper Manufacturing Research Laboratory | S. Nomura | 13 | P |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 3-4)]

| Organization | Director | Staff | Research areas |
|---|----------------|-------|----------------------------|
| Fukuoka Industrial Technology Center | T. Shiozawa | 126 | |
| Fukuoka Industrial Technology Center, Chemical Fiber Research Laboratory | T. Ueno | (27) | Ch, T, Ce, F |
| Fukuoka Industrial Technology Center, Materials Development Research Laboratory | A. Wakabayashi | (15) | I, P, Ch |
| Fukuoka Industrial Technology Center, Interior Research Laboratory | G. Yamaguchi | (11) | I |
| Fukuoka Industrial Technology Center, Machinery and Electronics Research Laboratory | Y. Akahoshi | (52) | M, Me, El |
| Fukuoka General Agricultural Research Institute, Chikugo Laboratory | T. Takahashi | 22 | I |
| Saga Industrial Research Institute | S. Arita | 34 | M, Me, Ch, I, F, El, |
| Saga Ceramics Research Laboratory | H. Takagi | 22 | Ce |
| Nagasaki Industrial Technology Center | S. Nagata | 40 | M, Me, Ch, El, F, D, |
| Nagasaki Ceramics Research Laboratory | H. Seki | 18 | Ce |
| Kumamoto Industrial Technology Center | K. Tsukitari | 43 | M, Me, Ch, Mfg, Ce, Mz, El |
| Kumamoto Processed Foods Research Laboratory | S. Uemura | 16 | F, Pk |
| Oita Industrial Research Institute | E. Yokoyama | 32 | M, Me, Ch, Ce, Mz, F, El |
| Oita Industrial Arts Institute, Hita | M. Yamamuro | 14 | I |
| Oita Industrial Arts Institute, Beppu | T. Eto | 14 | I |
| Beppu Industrial Arts Research Institute | F. Kai | 4 | I |
| Oita Pref Industrial Technology Research Exchange Center | S. Hashimoto | 5 | El |
| Miyazaki Industrial Research Institute | K. Nagano | 41 | M, Me, Ch, Ce, El, I |
| Miyazaki Food Products R&D Center | K. Nagano | 20 | F, B |
| Kagoshima Industrial Technology Center | K. Imagawa | 61 | M, Me, Ch, Ce, F, B, El, I |
| Kagoshima Agricultural Products Processing Research and Information Center | K. Matsubara | 11 | F |
| Kagoshima Oshima Tsumugi Research and Information Center | N. Niizu | 18 | T |
| Okinawa Industrial Research Institute | S. Shiroma | 23 | Ch, Me, Ce, B, Ep, F |
| Okinawa Industrial Arts Institute | Z. Teruya | 13 | I, T |

Key:

- M: Machinery,
- Me: Metals,
- Mf: Manufactured Products,
- Ch: Chemicals,
- L: Leather,
- D: Design,
- P: Plastics,
- T: Textiles,
- I: Industrial Technology,
- Ce: Ceramics,
- P: Paper,
- El: Electronics,
- Mi: Mining,
- B: Brewing,
- Pk: Packaging,
- Ep: Environmental pollution,
- Cn: Construction,
- F: Food Products,
- Ra: Radiation,
- R: Resources,
- W: Wood,
- In: Information,
- Ph: Pharmaceuticals

Listing of Public Research Organizations (Part 4-1)

| Organization | Affiliated committees and subcommittees | | | | | | | |
|--|---|----|----|----|----|----|----|----|
| | MM | CH | TX | MG | CI | EP | MO | EL |
| Hokkaido Pref Industrial Research Institute | X | X | | X | X | X | X | X |
| Hokkaido Pref Forestry Research Laboratory | | | | X | | | | X |
| Hokkaido Pref Underground Resources Research Institute | | X | | | X | X | | |
| Hokkaido Pref Cold Region Urban Research Institute | | | | X | X | X | | |
| Hokkaido Environmental Science Research Center | | | | | X | | | |
| Hokkaido Pref Industrial Technology Center | | | | | | X | | |
| Asahikawa Industrial Science and Technology Center | | | | X | X | | | |
| Asahikawa Industrial Arts Institute | | | | X | | | | |
| Kitami Industrial Science and Technology Center | X | | | X | | | | |
| Aomori Industrial Research Institute | | | X | | X | X | X | |
| Aomori Industrial Research Institute, Aomori Woodworking Institute and Aomori Industrial Technology Development Center | | | | X | X | | | X |
| Aomori Machinery and Metals Research Institute | X | X | | | | | | |
| Aomori Marine Processing Research Institute | | | | | | | X | |
| Iwate Industrial Research Institute | X | X | X | X | X | X | | X |
| Iwate Brewing and Foodstuff Research Laboratory | | | | X | | | X | |
| Iwate Fisheries Research Laboratory | | | | | | | X | |
| Akita Industrial Technology Center | X | X | | X | X | X | | |
| Akita Brewing Research Laboratory | | | | X | | | X | |
| Akita Environmental Technology Center | | | | | | X | | |
| Inawashiro Technology Development Center | | | | X | | | | |
| Yamagata Industrial Research Institute | X | X | X | X | X | X | X | X |
| Miyagi Industrial Research Institute | X | X | | X | X | X | X | X |
| Fukushima Industrial Research Lab, Fukushima | X | X | X | | | X | | |
| Fukushima Industrial Research Lab, Aizuwakamatsu | X | X | | X | X | | X | |
| Fukushima Industrial Research Lab, Iwaki | X | X | | | X | | | X |
| Ibaragi Industrial Research Institute | X | X | X | X | X | X | X | X |
| Tochigi Industrial Technology Center | X | X | | X | | | | |
| Tochigi Textile Research Laboratory | | | X | | | | | |
| Tochigi Center for Commerce and Industry | X | X | X | | | | | |
| Tochigi Tsumugi Textile Research Laboratory | | | X | | | | | |
| Tochigi Food Products Research Laboratory | | | | X | | | X | |
| Tochigi Ceramics Research Institute | | | | | X | | | |
| Gunma Industrial Research Institute | X | X | | X | X | X | X | X |
| Gunma Textile Research Laboratory | | | X | | X | | | |
| Gunma Agricultural Processing Center | | | | | | | X | |
| Saitama Mold and Machinery Research Laboratory | X | X | | | | | | |
| Saitama Textile Research Laboratory | | | X | | | | X | |
| Saitama Paper Manufacturing Research Laboratory | | X | | X | | | | |
| Saitama Food Products Research Laboratory | | | | X | | | X | |
| Saitama Industrial Technology Research Institute | | X | | X | X | X | | X |
| Saitama Horticulture Research Laboratory | | | | X | | X | X | |
| Saitama Environmental Pollution Center | | | | X | | | | |
| Chiba Industrial Research Institute | | X | | X | | X | X | X |
| Chiba Machinery and Metals Research Institute | X | X | | | | X | | X |
| Chiba Agricultural Research Laboratory | | | | X | | X | X | X |
| Tokyo Municipal Industrial Research Institute | X | X | | X | X | X | | X |
| Tokyo Municipal Textile Research Laboratory | | | X | | | X | | |
| Tokyo Municipal General Isotope Research Institute | | | | | | X | | |
| Tokyo Municipal Food Products Technology Center | | | | | | X | X | |
| Tokyo Municipal Leather Technology Center | | | | | | | X | |
| Tokyo Municipal Livestock Research Laboratory | | | | | | X | | |
| Kanagawa Industrial Research Institute | X | X | X | X | | | | |
| Kanagawa Industrial Arts Institute | | | | X | | | | |
| Kanagawa Textile Research Institute | | | X | | X | | | |
| Kanagawa Furniture Research Center | | | | | X | | | |
| Kanagawa Agricultural General Research Institute | | | | X | X | | | X |

(Continued)

[Continuation of Listing of Public Research Organizations (Part 4-2)]

| Organization | Affiliated committees and subcommittees | | | | | | | |
|---|---|----|----|----|----|----|----|----|
| | MM | CH | TX | MG | CI | EP | MO | EL |
| Yokohama Center for Small and Medium Enterprises | X | X | | X | | | | X |
| Niigata Industrial Research Institute | X | X | X | X | X | X | | X |
| Niigata Food Products Research Laboratory | | | | X | | | X | |
| Niigata Brewing Research Laboratory | | | | | | | X | X |
| Nagano Information Technology Research Institute | X | X | X | | | X | | X |
| Nagano Industrial Research Institute | X | X | | X | X | X | | X |
| Nagano Precision Machinery Research Institute | X | X | | | X | X | | X |
| Nagano Food Products Research Institute | | | | X | | | X | |
| Nagano General Forestry Information Center | | | | X | | | | |
| Yamanashi-Fuji Industrial Technology Center | X | | X | | | | | X |
| Yamanashi Industrial Technology Center | X | X | X | X | | X | X | X |
| Shizuoka Industrial Technology Center, Shizuoka | X | X | | X | X | X | X | X |
| Shizuoka Industrial Technology Center, Hamamatsu | X | X | X | | | X | | X |
| Shizuoka Industrial Technology Center, Fuji | X | | | X | | X | | X |
| Shizuoka Industrial Technology Center, Numazu | | | | | | | X | X |
| Shizuoka Design Center for Sm-Medium Enterprises | | | X | X | | | | |
| Shizuoka Center for New Industries | | | X | | | | | |
| Aichi Industrial Technology Center | X | X | | X | X | X | | X |
| Aichi Food Products Research Center | | X | | X | | X | | X |
| Aichi-Mikawa Fiber Research Center | | | X | | | X | | |
| Aichi-Owari Fiber Research Center | | | X | | | X | | X |
| Aichi-Tokoname Ceramics Research Center | | X | | X | X | X | | |
| Aichi-Seto Ceramics Research Center | X | | | X | X | X | | |
| Aichi Environmental Pollution Investigation Center | | | | | | X | | |
| Nagoya Industrial Research Institute | X | X | X | | X | X | | X |
| Gifu Industrial Technology Center | X | X | | X | | X | | X |
| Gifu Textile Research Laboratory | | | X | | | X | | X |
| Gifu Metals Research Laboratory | X | X | | | | X | | |
| Gifu Paper Manufacturing Research Institute | | X | | X | | X | | |
| Gifu Ceramics Research Institute | | | | X | X | X | | |
| Gifu Industrial Arts Institute | | | | X | | | | |
| Gifu Forestry Center | | | | X | | | | |
| Tajimi Ceramic Design Research Center | | | | X | | X | | |
| Doki Ceramics Research Laboratory | | | | X | X | | | |
| Mizunami Ceramics Research Laboratory | | | | X | X | | | |
| Mie Industrial Technology Center | X | X | X | X | | X | | X |
| Mie Metallurgical Research Laboratory | X | X | | | X | X | | X |
| Mie Ceramics Research Laboratory | | | X | | X | | | |
| Ise Industrial Arts Institute | | | | X | | X | | |
| Toyama Industrial Technology Center | X | X | X | X | X | X | | X |
| Toyama Forestry Research Center | | | | X | | | | |
| Toyama Pharmaceutical Research Institute | | | | | | | | |
| Toyama Food Products Research Institute | | | | | | | X | |
| Takaoka Industrial Arts Design Center | | | | X | | | | |
| Toyama Industrial Promotion Center | | | | X | | | | |
| Ishikawa Industrial Research Institute | X | X | X | X | X | X | X | X |
| Ishikawa Kutani-Yaki Pottery Research Laboratory | | | | X | X | | | |
| Ishikawa Forestry Research Laboratory, Ishikawa Wood Center | | | | X | | | | |
| Yamanaka Lacquerware Research Institute | | | | X | | | | |
| Wajima Lacquerware Research Institute | | | | X | | | | |

[Continued]

(Continuation of Listing of Public Research Organizations (Part 4-3))

| Organization | Affiliated committees and subcommittees | | | | | | | |
|--|---|----|----|----|----|----|----|----|
| | MM | CH | TX | MG | CI | EP | MO | EL |
| Fukui Industrial Research Institute | X | X | X | X | X | X | | X |
| Fukui Research Institute for Processed Foods | | | | X | | | X | |
| Takeo Industrial Research Institute | X | X | | | | X | | X |
| Shiga Pref Machinery and Metals Research Institute | X | X | X | | | X | | |
| Shiga Textile Information Center | | | X | | | X | | |
| Shiga Shiragaki Ceramics Research Laboratory | | | | X | X | | | |
| Shiga Industrial Research Institute | X | X | | X | | X | X | X |
| Kyoto Center for Small and Medium Enterprises | X | X | | X | X | X | X | X |
| Kyoto Textile Information Center | | | X | | | | | |
| Kyoto Industrial Research Institute | X | X | | X | X | X | X | X |
| Kyoto Dyeing and Weaving Research Institute | | | X | | X | X | X | X |
| Nara Industrial Research Institute | X | X | X | X | X | X | X | X |
| Nara Trade and Tourism Center | | | | X | | | | |
| Nara Forestry Research Laboratory | | | | X | | | | |
| Nara Pharmaceutical Information Center | | X | | | | | | |
| Osaka Pref Industrial Technology and General Research Center | X | X | X | X | X | | | X |
| Osaka Pref Industrial Design & Research Center | | | X | X | | | | |
| Osaka Pref Industrial Research Institute | X | X | | | X | X | X | X |
| Osaka Pref Environmental Science Research Inst. | | | | | | X | X | |
| Hyogo Pref Industrial Technology Center | X | X | X | X | X | X | X | X |
| Hyogo Pref Environmental Pollution Institute | | | | | | X | | |
| Hyogo Pref Central Agricultural Research Center | | | | X | | | X | |
| Wakayama Industrial Technology Center | X | X | X | X | X | X | X | X |
| Wakayama Lacquerware Research Laboratory | | | | X | | | | |
| Tottori Industrial Research Institute | X | X | X | X | X | X | | X |
| Tottori Research Institute for Processed Foods | | | | X | | | X | |
| Shimane Pref Industrial Technology Center | X | X | | X | X | X | X | X |
| Okayama Industrial Technology Center | X | X | X | X | X | X | X | X |
| Hiroshima Pref W. Industrial Technology Center | X | X | | | X | X | | X |
| Hiroshima Pref E. Industrial Technology Center | X | X | X | X | | X | | |
| Hiroshima Pref Industrial Food Technology Center | | | | X | | X | X | |
| Hiroshima Industrial Technology Center | X | X | | X | X | X | | X |
| Yamaguchi Industrial Technology Center | X | X | X | X | X | X | X | X |
| Tokushima Pref Industrial Technology Center | X | X | X | X | X | X | X | X |
| Tokushima Environmental Preservation Center | | | | X | | X | | |
| Tokushima Woodworking Center | | | | X | | | | |
| Kagawa Food Research Laboratory | | | | X | | X | X | |
| Kagawa Fermented Foods Research Laboratory | X | X | | X | | X | X | |
| Kagawa Industrial Technology Center | X | X | | X | X | | | X |
| Ehime Industrial Technology Center | | X | | X | | X | X | |
| Ehime Paper Manufacturing Research Laboratory | | | | | X | X | | |
| Ehime Ceramics Research Laboratory | | | | | X | | | |
| Ehime Research Laboratory for Textile Industry | | | X | | | X | | |
| Niihama Municipal Industrial Research Institute | | | | | | | | |
| Kochi Industrial Technology Center | X | X | | X | X | X | X | X |
| Kochi Paper Manufacturing Research Laboratory | | X | | X | | | | |

[Continued]

[Continuation of Listing of Public Research Organizations (Part 4-4)]

| Organization | Affiliated committees and subcommittees | | | | | | | |
|--|---|-----------|-----------|------------|-----------|-----------|-----------|-----------|
| | MM | CH | TX | MG | CI | EP | MO | EL |
| Fukuoka Industrial Technology Center | X | X | X | X | X | X | X | X |
| Fukuoka Industrial Technology Center, Chemical Fiber Research Laboratory | | X | X | | X | | X | X |
| Fukuoka Industrial Technology Center, Materials Development Research Laboratory | | X | | X | X | | X | |
| Fukuoka Industrial Technology Center, Interior Research Laboratory | | | | X | | | | X |
| Fukuoka Industrial Technology Center, Machinery and Electronics Research Laboratory | | X | | | | | | X |
| Fukuoka General Agricultural Research Institute, Chikugo Laboratory | | | | X | | | | |
| Saga Industrial Research Institute | X | X | | X | | X | X | X |
| Saga Ceramics Research Laboratory | | | | X | X | X | X | |
| Nagasaki Industrial Technology Center | X | X | | X | | X | X | X |
| Nagasaki Ceramics Research Laboratory | | | | X | X | X | X | |
| Kumamoto Industrial Technology Center | X | X | | X | X | X | X | X |
| Kumamoto Processed Foods Research Laboratory | | | | X | | | X | X |
| Oita Industrial Research Institute | X | X | | | X | X | X | X |
| Oita Industrial Arts Institute, Hita | | | | X | | | | |
| Oita Industrial Arts Institute, Beppu | | | | X | | | | |
| Beppu Industrial Arts Research Institute | | | | X | | | | |
| Oita Pref Industrial Technology Research Exchange Center | | | | | | | | X |
| Miyazaki Industrial Research Institute | X | X | | X | X | X | | X |
| Miyazaki Food Products R&D Center | | | | | | | X | |
| Kagoshima Industrial Technology Center | X | X | X | X | X | X | X | X |
| Kagoshima Agricultural Products Processing Research and Information Center | | | | X | X | X | X | |
| Kagoshima Oshima Tsumugi Research and Information Center | | | X | | | | | |
| Okinawa Industrial Research Institute | X | X | | | X | X | X | X |
| Okinawa Industrial Arts Institute | | | X | X | | | | |
| TOTAL | 62 | 78 | 45 | 107 | 57 | 87 | 65 | 69 |

Key:
 MM: Mach/Metals,
 CH: Chemicals,
 TX: Textiles,
 MG: Manufacturing,
 CI: Ceramics,
 EP: Pollution,
 MO: Microbes,
 EL: Electronics

Ties to Research Organizations Outside Japan

93FE0225H Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 477-522

[Text] 1. Mobile Researcher Program

The recent rapid growth of science and technology continues to force major changes upon traditional academic fields and increase the need for more research in interdisciplinary fields.

The most effective way to deal with that new reality and improve research effectiveness is to actively implement researcher exchange programs between the various AIST research laboratories, and exchange programs between AIST research laboratories and national universities, governmental research institutes, and private research institutes. Therefore, AIST has established a mobile researcher program to accomplish that objective.

The mobile researcher program is subdivided into two programs, namely, a program for inviting researchers and a program for lending researchers. These are implemented in accordance with regulations governing AIST mobile researcher programs.

(1) The researcher invitation program invites qualified researchers working in similar fields outside of AIST to AIST affiliated research laboratories to bring about improvements in the level of research findings by offering technical support.

(2) The researcher lending program sends researchers working in AIST affiliated research laboratories to national universities and other governmental research institutes with the aim of improving the level of research by offering technical support while using the equipment and facilities of those institutes.

2. Joint Research

In order for Japan to achieve stable economic growth in the future, the long-term prosperity and growth of science and technology are absolutely essential. In that context, AIST research laboratories have been actively promoting

research in those fundamental fields that make up the industrial base and those fields at the leading edge of science and technology in the world.

In the meantime, the recent rapid growth of science and technology has continued to change the idea of what are traditional academic fields and has increased the need for more research in interdisciplinary fields. This has increased the need for more exchange programs involving researchers from different fields, particularly leading-edge and basic technology fields.

In light of that, AIST have received strong requests from top executives for more effective joint research exchange programs.

Joint research is believed to be a very effective way to resolve problems that exist at border regions between applied research and commercial research.

AIST research laboratories have been involved in joint research with universities and private companies from the above perspective and have decided to step up those activities even more so in the future. The implementation of joint research is conducted in accordance with AIST regulations governing joint research which are provided below.

AIST Joint Research Regulations

(Purpose)

Article 1. These regulations shall govern research that is conducted jointly, hereinafter called "joint research", between any outside entity and a research laboratory operated by the Agency of Industrial Science and Technology, hereinafter called "AIST research laboratory", pertaining to allocation of research costs, technical information exchanges, and distribution of research.

(Entering Joint Research Agreement)

Article 2. The director of an AIST research laboratory, hereinafter called AIST research laboratory director, enables effective implementation of research by establishing joint research with parties other than AIST research laboratories. He/she may conclude an agreement related to joint research with said parties, hereinafter called "joint research agreement" when the party with whom the joint research agreement is to be made is deemed to possess the full technical capability and economic basis for carrying out said joint research.

(Joint Research Agreement)

Article 3. When a joint research agreement is entered into as described in the preceding article, the AIST research laboratory director shall draft a joint research agreement that covers the following items, hereafter called "the agreement."

- (1) Subject of joint research
- (2) Specifics of joint research
- (3) Place where joint research will be implemented
- (4) Duration of joint research
- (5) Administration and distribution of joint research
- (6) Name of principle researchers participating in joint research
- (7) Distribution of costs and fixed assets required in joint research
- (8) Actions concerning patent filing pertaining to technical results, hereinafter called "research findings", obtained in joint research
- (9) Actions pertaining to inventions made during joint research
- (10) Actions pertaining to public disclosure of research results
- (11) Other necessary items for conducting joint research

(Reports to AIST Director-General)

Article 4. [1.] When concluding a joint research agreement, the AIST research laboratory director shall immediately notify the director-general of AIST, hereinafter called the AIST director-general, in writing and provide copies of that agreement.

2. The provisions in the preceding article, with the exception of Article 3, Item 6, shall apply when changes are made in the joint research agreement.

(Joint Research Administration)

Article 5. [1.] The AIST research laboratory director has sole administrative powers in managing the joint research and shall try to effectively promote said joint research.

2. In the event that the joint research partner is a national university, including institutions operated similar to national universities, or other government-affiliated research institutes, hereinafter called national universities, or the joint research partner is an international organization, foreign government, university, or other foreign group, hereinafter called international organization, the AIST research laboratory director shall manage the joint research jointly with the joint research party and try to effectively promote said joint research notwithstanding the provisions in the preceding sections.

(Patent Applications)

Article 6. [1.] In the event a researcher affiliated with an AIST research laboratory makes an invention on his/her own as a result of the joint research, the AIST research laboratory director shall obtain the consent of the AIST director-general before filing for a patent on said invention.

2. In the event a researcher affiliated with the joint research partner makes an invention on his/her own as a result of the joint research, the joint research partner shall obtain the consent of the AIST director-general before filing for a patent on said invention.

(Joint Patents)

Article 7. [1.] In the event a researcher affiliated with the joint research partner and a researcher belonging to an AIST research laboratory make an invention jointly as a result of their joint research, the AIST director-general shall file for a joint patent with the joint research partner when filing for a patent. [In the event the joint research partner is a national university, the researcher will say when the invention has not been recognized as an official invention by the national university with whom he/she is affiliated. The same is true for the next clause.]

This provision shall not apply, however, in cases where the AIST director-general has made a separate agreement regarding patent applications.

2. When filing for the joint patent mentioned in the previous clause, the AIST director-general shall conclude a joint patent agreement with the joint research partner using Form 1.

(Filing Authorization)

Article 8. [1.] The AIST director-general may delegate patent application authority for the patent mentioned in Item 2 of the preceding article to the AIST research laboratory director.

2. When the AIST research laboratory director has received the authority stipulated in the preceding clause, he/she shall send notify the AIST director-general in writing concerning the execution of those duties immediately after their execution.

(Special Provisions When Research Partner Is International Organization)

Article 9. [1.] In cases where an invention is made jointly by a researcher belonging to an AIST research laboratory and a researcher belonging to a joint research partner, the AIST research laboratory director may use a different provision in the agreement than Article 7, Item 1 pertaining to patent applications when that research partner is a foreign organization.

2. When entering into agreement with a joint research partner based on the preceding provision, the AIST research laboratory director shall obtain the prior approval of the AIST director-general. This rule shall not apply, however, in cases where separate provisions have been made for patent application pertaining to inventions made jointly.

(Priority Licensing)

Article 10. [1.] With regard to inventions pertaining to research findings, the AIST director-general may grant research partners or parties designated as joint research partners priority licensing rights on those patents bequeathed to the AIST director-general or acquired on the basis thereof, hereinafter

called patent rights, etc. bequeathed to the AIST director-general, for periods not exceeding 5 years from the date joint research is completed.

2. With regard to joint inventions pertaining to research findings, the AIST director-general may grant parties designated as joint research partners priority licensing rights for periods not exceeding 5 years for those patent rights where patents are owned jointly with the AIST director-general or were acquired on the basis thereof, hereinafter called joint patent rights.

3. The provisions provided in Item 1 shall apply to rights to obtain a patent or patent rights, hereinafter called basic patent rights, as they pertain to AIST director-general administration where the aim was commercialization through joint research.

(Third-Party Licensing Approval)

Article 11. [1.] If a party which has been granted priority licensing rights for an invention in accordance with Item 1 or 2 of the preceding article fails to license said invention without good reason after the second year of having received said priority licensing rights, the AIST director-general may license the rights to said invention to a party other than said party granted priority licensing rights, hereinafter called the third party.

2. If granting said priority licensing rights to a party granted licensing rights according to the preceding article is considered not to be in the best public interest, the AIST director-general may license said invention to a third party even during the priority period.

3. If excluding a third party from licensing an invention pertaining to joint patent rights is considered not to be in the best public interest, the AIST director-general may license said invention to a third party.

4. If a third party is granted licensing rights for an invention pertaining to joint patent rights, the AIST director-general may approve said licensing on his/her own notwithstanding the provisions in Article 73, Item 3 of the Patent Law.

(Royalties)

Article 12. [1.] When licensing is granted for inventions pertaining to patent rights, etc. bequeathed to the AIST director-general, or basic patent rights, the AIST director-general shall assess a royalty as provided in a separate licensing agreement.

2. When a joint research partner wants to license an invention pertaining to jointly-held patent rights, the AIST director-general shall assess a royalty as provided in a separate licensing agreement. In that case, the royalty assessed will be adjusted according to the share held in said patent rights by the AIST director-general.

3. The royalty assessed for joint patent rights from parties other than the joint research party shall be returned to the AIST director-general and joint research partner according to the respective shares held in said rights.

(Final Joint Research Summary Report)

Article 13. When joint research is completed, the AIST research laboratory director shall immediately prepare a final report summarizing the joint research project and present it to the AIST director-general.

(Public Disclosure of Research Findings)

Article 14. [1.] When a joint research partner plans to disclose research findings to parties other than the AIST research laboratory director during the period when joint research is being implemented, he/she shall obtain the prior consent of the AIST research laboratory director.

2. When the AIST research laboratory director plans to disclose findings from joint research to parties other than the joint research partner during the period when joint research is being implemented, he/she shall obtain prior consent of the joint research partner.

Article 15. [1.] After the joint research period is complete, the AIST research laboratory director shall publish the research findings. However, if a joint research partner has petitioned the AIST research laboratory director not to publicize the research findings out of business concerns, all or part of the research findings pertaining to priority licensing rights granted according to Article 10, Item 1 (includes Item 3 as well) for patent rights, etc. bequeathed to the AIST director-general, and research findings pertaining to jointly-held patent rights, may be omitted from being disclosed.

2. When a decision is made to grant licensing to a third party in accordance with the provisions in Article 11, the AIST research laboratory director shall disclose the research findings notwithstanding the preceding provision.

3. In the case of the provisions in Item 1, the AIST research laboratory director shall maintain secrecy with regards to items affecting the interests of the joint research partner.

(Applicability)

Article 16. The provisions from Article 6 to Article 12, and those in the preceding article, apply to design rights and registered design rights, as well as utility model rights and registered utility model rights.

(Addenda)

1. These regulations have been in effect since 1 October 1968.
2. The following revision should be made to the AIST Research Laboratory Administration Basic Guidelines (33-30--886) 5(4).

5(4) Basic Research - In addition to what is provided in the Basic Guidelines, the research conducted jointly by the AIST research laboratory director of another AIST research laboratory with a party other than an AIST research laboratory is governed by the AIST Joint Research Regulations.
3. The following revision should be made to AIST Research Laboratory Administration Basic Guidelines (33-30--886) 6.

6 - Delete

Addendum

These regulations have been in effect since 23 December 1981.

Addendum

These regulations have been in effect since 1 December 1988.

Addendum

These regulations have been in effect since 1 July 1989.

Form I (Article 7, Item 2)

Joint Application Agreement (Sample)

The director-general of the Agency of Industrial Science and Technology in MITI, _____, hereinafter referred to as Party A, and the president and chief executive officer, _____ of _____, hereinafter referred to as Party B, do hereby execute a joint application agreement regarding _____ (invention name), in which said invention was made jointly by employee(s) belonging to Party A and employee(s), in the case of corporations, belonging to Party B.

(Ownership and Interest in Patent Rights)

Article 1. Party A and Party B shall jointly own the rights to obtain a patent pertaining to the following invention, hereinafter called "the invention", after those patent rights have been registered.

Title of Invention

Specifics of Invention (provide an outline of the invention centered around the ranges required of the patent)

Interest

Party A: ____ %

Party B: ____ %

(Patent Fees, Etc.)

Article 2. [1.] Party B must assume all expenses including filing and patent fees related to applications and patent rights of "the invention."

2. If Party B does not assume responsibility for those filing and patent fees, Party B must submit a "deed of transfer" to Party A that relinquishes the interest of Party B in said rights to Party A.

Note: In the event that Party B is a national university, all of Article 2 applies which states that Party B must assume all necessary costs in accordance with his/her share of interest as stated in the preceding clause for the acquisition and administration of patent rights pertaining to joint application of "the invention."

(Licensing Joint Patents)

Article 3. When licensing "the invention", Party B must conclude a separate licensing agreement with Party A, and pay a royalty to Party A as stipulated in that licensing agreement.

(Third-Party Licensing)

Article 4. [1.] Party A and/or Party B shall obtain the consent of the other party when "the invention" is licensed to a party other than Party A or Party B, hereinafter called the third party.

2. If it is considered detrimental to the public interest for a third party to be excluded from licensing "the invention", or Party B refuses to license "the invention" without good cause, Party A may approve licensing to a third party on his/her own notwithstanding the previous provisions.

3. The royalties assessed to a third-party for "the invention" shall be returned to Party A and Party B in accordance with their share of interest in said invention.

(Consultation)

Article 5. In addition to that which is provided in the agreement, Party A and Party B shall hold consultations to decide other necessary items pertaining to administration of "the invention."

Joint Research Agreement I (Sample)

The director, _____, of the _____ (AIST research laboratory), hereinafter referred to as Party A, and the president and chief executive officer, _____, of _____, hereinafter referred to as Party B, do hereby conclude an agreement on the implementation of joint research and disposition of results pertaining to _____ in accordance with the following provisions.

(Joint Research)

Article 1. Party A and Party B shall implement the following research jointly.

- (1) Research subject - Research on _____
- (2) Research objective
- (3) Research specifics
 - a. Research on _____.
 - b. Research on _____.
 - c. Research on _____.
 - d. Research on _____.

(Research Place)

Article 2. The joint research will be conducted at the following locations.

- (1) Research: _____ Address: _____
- (2) Research: _____ Address: _____

(Research Term)

Article 3. The joint research will be conducted from _____ (date) to _____ (date).

(Research Administration)

Article 4. The joint research will be administered solely by Party A.

Note: In the event that Party B is a national university, the joint research will be managed jointly by Party A and Party B.

(Research Distribution)

Article 5. Party A and Party B will be allocated research as specified in Table 2.

(Researchers)

Article 6. Party A and Party B will each provide researchers for joint research as specified in Table 2.

(Expense Allocation)

Article 7. Party A and Party B will share the cost of the joint research as specified in Table 3.

(Patent Application)

Article 8. If a researcher belonging to Party A, or researcher belonging to Party B, makes an invention on his/her own while conducting joint research, and decides to file for a patent on said invention, Party A and Party B shall obtain prior consent from the other partner regarding said invention.

(Joint Patent Application)

Article 9. Party A and Party B shall file for a patent jointly if a researcher belonging to Party A and researcher belonging to Party B make an invention jointly while conducting joint research and want to file a patent on said invention.

(Patent Fees, Etc.)

Article 10. [1.] Party B must assume all the necessary costs involved in acquiring and managing patent rights pertaining to the joint application mentioned in the previous article.

2. If Party B does not assume responsibility for those costs, Party B must submit a "deed of transfer" to Party A that relinquishes his/her interest in said rights to Party A.

Note: In the event that Party B is a national university, all of Article 10 applies which states that Party B must assume all necessary costs for acquiring and administering patent rights pertaining to the aforementioned joint application in proportion to its share of ownership in said rights.

(Priority Licenses)

Article 11. [1.] If Party B, or a party designated by Party B, petitions the AIST director-general for priority licensing rights on an invention pertaining to rights for patents bequeathed to the AIST director-general patents, or patent rights acquired on the basis thereof (excluding Item 2), hereinafter called patent rights, etc. bequeathed to the AIST director-general, with the invention being the result of technical findings made during joint research, hereinafter called research findings, the AIST director-general shall grant Party B, or said party designated by Party B, priority rights after _____ (date upon which joint research is complete).

2. If Party B, or a Party designated by Party B, petitions the AIST director for priority licensing rights on an invention pertaining to rights for patents owned jointly by the AIST director-general and Party B, or pertaining to patent rights acquired on the basis thereof, hereinafter called joint patent rights, with the joint invention being the result of technical findings made during joint research, the AIST director-general shall grant said designated party priority rights from _____ (date upon which joint research is complete).

3. The provisions provided in Item 1 shall apply to patent rights, hereinafter called basic patent rights, that pertain to AIST director-general administration where the aim was commercialization through joint research.

Patent Number: _____

Title of Invention

Note:

- a. In the event rights applicable to this clause do not exist, the clause is deleted, and "or basic patent rights" in Article 13 is deleted.
- b. In the event patent rights applicable to this clause are rights to obtain a patent, "patent rights" within the clause is revised to read "rights to obtain a patent", "patent number" is revised to "patent application number", and "basic patent rights" in the clause and Article 13 is revised to read "claim."
- c. In the event patent rights, and rights to obtain a patent, do exist, "patent rights" within the clause is revised to read "patent rights, and rights to obtain a patent", and "basic patent rights" in the clause and Article 13 is revised to read "basic patent rights, etc."

(Third Party Licensing)

Article 12. [1.] If a party which is granted priority rights on an invention according to the provisions stated in the preceding article, hereinafter called priority licensee, fails to license said invention without good reason after the second year of priority rights, the AIST director-general may license said invention to a party other than said priority licensee, hereinafter called the third party.

2. If granting priority rights is clearly thought to be detrimental to the public interest for priority rights granted according to the preceding article, the AIST director-general may allow the invention pertaining to said priority rights to be licensed to a third party even during the priority licensing period.

3. If it clearly thought to be detrimental to the public interest to disallow a third party from licensing an invention pertaining to joint patent rights, the AIST director-general may allow the third party to license the invention pertaining to said priority rights.

4. If the AIST director-general is going to license an invention pertaining to joint patent rights to a third party as provided in Item 2 of this article, he/she may grant licensing of the invention pertaining to said priority rights on his/her own notwithstanding Article 73, Item 3 of the Patent Law.

(Royalties)

Article 13. [1.] If Party B, or a party designated by Party B, wants to license an invention pertaining to patent rights, etc. bequeathed to the AIST director-general, or basic patent rights, Party B, or the party designated by Party B, must pay a royalty to the AIST director-general as specified in a separate licensing agreement.

2. If Party B wants to license an invention pertaining to joint patent rights, he/she must pay a royalty to the AIST director-general as prescribed in an separate licensing agreement.

3. The royalties collected from Party B pertaining to joint patent rights shall be returned to the AIST director-general and Party B in accordance with their share of interest in said rights.

(Final Joint Research Reports)

Article 14. When joint research is complete, Party B shall work with Party A to make out a final joint research report that Party A will present to the AIST director-general.

(Public Disclosure of Research Findings)

Article 15. When Party A or Party B wants to disclose research findings to parties other than Party A or Party B during the joint research implementation period, the approval of the other party is required.

Note: The approval of Party A is required when Party B wants to inform another party other than Party A of research findings made during the implementation period for joint research.

Article 16. [1.] As provided in Article 3, Party A shall publicly disclose research findings upon completing the effective joint research period.

However, if Party B petitions Party A not to publicly disclose the research findings due to business concerns, all or part of the research findings made during the priority licensing period for research results pertaining to preferential license rights granted under Article 11 (includes Item 3 as well) for patent rights, etc. bequeathed to the AIST director-general, and research findings pertaining to existing rights or jointly-held rights for research findings of Party B, may be omitted from public disclosure.

2. If Party A decides to grant licensing to a third party as provided for in Article 12, he/she shall disclose research findings notwithstanding the preceding provisions.

3. With respect to the provisions in Item 1, Party A shall maintain secrecy with regard to items in which Party B has an interest up until such time the research findings are publicly disclosed.

(Use of Equipment)

Article 17. Upon obtaining consent from Party A, Party B may use free of charge that equipment owned by Party A that is needed for joint research.

Article 18. When researchers belonging to Party B use equipment owned by Party A as provided for in the preceding article, Party B must follow the instructions and regulations of Party A.

(Liability)

Article 19. When equipment owned Party A is damaged, either on purpose or through gross neglect, Party B must recompense Party A for said damages.

Article 20. Upon obtaining consent from Party A, Party B may bring his/her own equipment needed for joint research to the research laboratory of Party A.

Article 21. The provisions from Article 8 to Article 13, and Article 16, apply to design rights and registered design rights, as well as utility model rights and registered utility model rights.

Article 22. In addition to that which is provided in this agreement, Party A and Party B shall hold consultations on other necessary items related to the administration of joint research.

Joint Research Agreement II (Sample)

The director, _____, of _____ (AIST research laboratory), hereinafter referred to as Party A, and the president and chief executive officer, _____, of _____, hereinafter referred to as Party B, do hereby conclude an agreement concerning implementation of joint research and disposition of results pertaining to _____ in accordance with the following provisions.

(Joint Research)

Article 1. Party A and Party B shall implement the following research jointly.

- (1) Research subject - Research on _____
- (2) Research objective _____
- (3) Research specifics
 - a. Research on _____.
 - b. Research on _____.
 - c. Research on _____.
 - d. Research on _____.

(Research Place)

Article 2. The joint research will be conducted at the following locations.

- (1) Research: _____ Address: _____
- (2) Research: _____ Address: _____

(Research Term)

Article 3. The joint research will be conducted from _____ (date) to _____ (date).

(Research Administration)

Article 4. The joint research will be administered solely by Party A.

Note: In the event that Party B is a national university, the joint research will be managed jointly by Party A and Party B.

(Research Distribution)

Article 5. Party A and Party B will be allocated research as specified in Table 2.

(Researchers)

Article 6. Party A and Party B will each provide researchers for joint research as specified in Table 2.

(Expense Allocation)

Article 7. Party A and Party B will share the cost of joint research as specified in Table 3.

(Patent Application)

Article 8. If a researcher belonging to Party A, or researcher belonging to Party B, makes an invention on his/her own while conducting joint research, and decides to file for a patent on said invention, Party A and Party B shall obtain prior consent from the other research partner regarding said invention.

(Joint Patent Application)

Article 9. Party A and Party B shall file for a patent jointly if a researcher belonging to Party A and researcher belonging to Party B make a joint invention jointly while conducting joint research and want to file a patent on said invention.

(Patent Fees, Etc.)

Article 10. [1.] Party B must assume all the necessary costs involved in acquiring and managing patent rights pertaining to the joint application mentioned in the previous article.

2. If Party B does not assume responsibility for those costs, Party B must submit a "deed of transfer" to Party A that relinquishes his/her interest in said rights to Party A.

Note: In the event that Party B is a national university, all of Article 10 applies which states that Party B must assume all necessary costs for acquiring and managing patent rights pertaining to the aforementioned joint application in accordance with its share of ownership in said rights.

(Priority Licenses)

Article 11. [1.] If Party B, or a party designated by Party B, petitions the AIST director-general for priority rights on an invention pertaining to rights for patents bequeathed to the AIST director-general, or patent rights acquired on the basis thereof, hereinafter called patent rights, etc. bequeathed to the AIST director-general, with the invention being the result of technical findings made during joint research, hereinafter called research findings, the AIST director-general may grant Party B, or said party designated by Party B, priority rights from _____ (date upon which joint research is complete).

2. If Party B, or a Party designated by Party B, petitions the AIST research laboratory director for priority licensing rights on an invention pertaining to rights for patents owned jointly by the AIST director-general and Party B, or pertaining to patent rights obtained on that basis thereof, hereinafter called joint patent rights, etc., the AIST director-general may grant said designated party priority rights from _____ (date upon which joint research is complete).

3. The provisions provided in Item 1 shall apply to patent rights, hereinafter called basic patent rights, that pertain to AIST director-general administration where the aim was commercialization through joint research.

Patent Number: _____

Title of Invention

Note:

- a. In the event rights applicable to this clause do not exist, the clause is deleted, and "or basic patent rights" in Article 13 is deleted.
- b. In the event rights applicable to this clause are rights to obtain a patent, "patent rights" within the clause is revised to read "rights to obtain a patent", "patent number" is revised to read "patent application number", and "basic patent rights" in the clause and Article 13 is revised to read "claim."
- c. In the event patent rights, and rights to obtain a patent, do exist, "patent rights" within the clause is revised to read "patent rights, and rights to obtain a patent", and "basic patent rights" in the clause and Article 13 is revised to read "basic patent rights, etc."

(Third Party Licensing)

Article 12. [1.] If a party, which is granted priority rights in licensing an invention according to the provisions stated in the preceding article, hereinafter called priority licensee, fails to license said invention without good reason after the second year of holding priority rights, the AIST director-general may allow said invention to be licensed to a party other than said priority licensee, hereinafter called the third party.

2. If granting priority rights is clearly thought to be detrimental to the public interest for priority rights granted according to the preceding article, the AIST director-general may allow the invention pertaining to said priority rights to be licensed to a third party even during the priority licensing period.

3. If it clearly thought to be detrimental to the public interest to disallow a third party from licensing an invention pertaining to joint patent rights, the AIST director-general may allow the third party to license the invention pertaining to said priority rights.

4. If the AIST director-general is going to license an invention pertaining to joint patent rights to a third party as provided in Item 2 of this article, he/she may grant licensing of the invention pertaining to said priority rights on his/her own notwithstanding Article 73, Item 3 of the Patent Law.

(Royalties)

Article 13. [1.] If Party B, or a party designated by Party B, wants to license an invention pertaining to patent rights, etc. bequeathed to the AIST director-general, or basic patent rights, Party B, or the party designated by Party B, must pay a royalty to the AIST director-general as specified in a separate licensing agreement.

2. If Party B wants to license an invention pertaining to joint patent rights, he/she must pay a royalty to the AIST director-general as prescribed in an separate licensing agreement.

3. The royalties collected from Party B pertaining to joint patent rights shall be returned to the AIST director-general and Party B in accordance with their share of interest in said rights.

(Final Joint Research Reports)

Article 14. When joint research is complete, Party B shall work with Party A to make out a final joint research report that Party A will present to the AIST director-general.

(Public Disclosure of Research Findings)

Article 15. When Party A or Party B wants to disclose research findings to parties other than Party A or Party B during the joint research implementation period, the approval of the other party is required.

Note: The approval of Party A is required when Party B wants to inform another party other than Party A of research findings made during the joint research implementation period.

Article 16. [1.] As provided in Article 3, Party A shall publicly disclose research findings upon completion of the effective joint research period. However, if Party B petitions Party A not to publicly disclose research findings due to business concerns, all or part of the research findings made during the priority period regarding research results pertaining to preferential license rights granted under Article 11 (includes Item 3 as well) for patent rights, etc. bequeathed to the AIST director-general, and research findings pertaining to existing rights or jointly-held rights for research findings of Party B, may be omitted from public disclosure.

2. If Party A decides to grant licensing to a third party as provided for in Article 12, he/she shall disclose research findings notwithstanding the preceding provision.

3. With respect to the provisions in Item 1, Party A shall maintain secrecy with regard to items in which Party B has an interest up until such time the research findings are publicly disclosed.

(Applicability)

Article 17. The provisions from Article 8 to Article 13, and Article 16, apply to design rights and registered design rights, as well as utility model rights and registered utility model rights.

(Consultation)

Article 18. In addition to that which is provided in this agreement, Party A and Party B shall hold consultations on other necessary items related to the handling of joint research.

Joint Agreement III (Sample)

The director, _____, of _____ (AIST research laboratory), hereinafter referred to as Party A, and the president and chief executive officer, _____, of _____, hereinafter referred to as Party B, do hereby conclude an agreement concerning implementation of joint research and disposition of results pertaining to _____ in accordance with the following provisions.

(Joint Research)

Article 1. Party A and Party B will implement the following research jointly.

- (1) Research subject - Research on _____
- (2) Research objective
- (3) Research specifics
 - a. Research on _____.
 - b. Research on _____.
 - c. Research on _____.
 - d. Research on _____.

(Research Place)

Article 2. The joint research will be conducted at the following locations.

- (1) Research: _____ Address: _____
- (2) Research: _____ Address: _____

(Research Term)

Article 3. The joint research will be conducted from _____ (date) to _____ (date).

(Research Administration)

Article 4. The joint research will be administered solely by Party A.

Note: In the event that Party B is a national university, the joint research will be managed jointly by Party A and Party B.

(Research Distribution)

Article 5. Party A and Party B will be allocated research as specified in Table 2.

(Researchers)

Article 6. Party A and Party B will each provide researchers for joint research as specified in Table 2.

(Expense Allocation)

Article 7. Party A and Party B will share the cost of joint research as specified in Table 3.

(Patent Application)

Article 8. If a researcher belonging to Party A, or researcher belonging to Party B, makes an invention on his/her own while conducting joint research, and decides to file for a patent on said invention, Party A and Party B shall obtain prior consent from the other research partner regarding said invention.

(Joint Patent Application)

Article 9. Party A and Party B shall file for a patent jointly if a researcher belonging to Party A and researcher belonging to Party B make an invention jointly while conducting joint research and want to file a patent on said invention.

(Patent Fees, Etc.)

Article 10. [1.] Party B must assume all the necessary costs involved in acquiring and administering patent rights pertaining to the joint application mentioned in the previous article.

2. If Party B does not assume responsibility for those costs, Party B must submit a "deed of transfer" to Party A that relinquishes his/her interest in said rights to Party A.

Note: In the event that Party B is a national university, all of Article 10 applies which states that Party B must assume all necessary costs for acquiring and managing patent rights pertaining to the aforementioned joint application in accordance with its share of ownership in said rights.

(Third Party Licensing)

Article 11. If excluding a third party from being granted priority rights on an invention obtained as a result of joint research by Party B and the AIST director-general is thought to be detrimental to the public interest, the AIST director-general may license said invention to a third party notwithstanding Article 73, 3.

(Royalties)

Article 12. [1.] If Party B plans to license an invention pertaining to jointly-held patent rights, he/she must pay a royalty to the AIST director-general as specified in a separate licensing agreement.

2. The royalties collected from the third party regarding jointly-held patent rights shall be returned to the AIST director-general and Party B in proportion to their share of interest in said rights.

(Final Joint Research Reports)

Article 13. When joint research is complete, Party B shall work with Party A to make out a final joint research report that Party A will present to the AIST director-general.

(Public Disclosure of Research Findings)

Article 14. When Party A or Party B decides to reveal the research findings to a party other than Party A or Party B during the joint research implementation period, the approval of the other party is required.

Note: The approval of Party A is required when Party B wants to inform another party other than Party A of research findings made during the joint research implementation period.

Article 15. [1.] As provided in Article 3, Party A shall publicly disclose research findings upon completion of the effective joint research period. However, if Party B petitions Party A not to publicly disclose the research findings due to business concerns, all or part of the research findings made during the priority licensing period regarding research results pertaining to preferential license rights granted under Article 11 (includes Item 3 as well) for patent rights bequeathed to the AIST director-general, and research findings pertaining to existing rights or jointly-held rights for research findings of Party B, may be omitted from public disclosure.

2. If Party A decides to grant licensing to a third party as provided for in Article 11, he/she shall disclose research findings notwithstanding the preceding provision.

3. With regard to the provisions in Item 1, Party A shall maintain secrecy with regard to items in which Party B has an interest up until such time the research findings are publicly disclosed.

(Applicability)

Article 16. The provisions from Article 8 to Article 12, and Article 15, apply to design rights and registered design rights, as well as utility model rights and registered utility model rights.

(Consultation)

Article 17. In addition to that which is provided in this agreement, Party A and Party B shall hold consultations on other necessary items related to the administration of joint research.

1991 Joint Research Projects

| AIST research laboratory | Research project | Research partner | Term |
|---|---|---|-------------------|
| National Research Laboratory of Metrology | Research on development of high-precision laser interferometer | Idec Izumi Corporation | 06-01-88-03-31-92 |
| | R&D on secondary low-vacuum pressure standards | Nagano Instrument Manufacturing, Ltd. | 07-01-88-03-31-92 |
| | Research on traceability of shore hardness standard | Bearing Testing Association of Japan Bearing Research Laboratory | 06-26-88-03-31-92 |
| | High precision measurement stabilized semiconductor laser wavelengths of 1.55 μ band frequency | Photo Measurement Technologies, Ltd. | 10-01-89-03-31-92 |
| | Development of CAMPS compatible ceramic injection molding system | Yamashiro Precision Manufacturing, Ltd. | 11-01-89-03-31-92 |
| | Research on property evaluation techniques for accelerometers | Kyowa Electronic Instruments Co., Ltd. | 12-01-89-03-31-92 |
| | Research on sensitivity calibration method for supersonic search unit | Rion, Co., Ltd. | 07-01-90-03-31-92 |
| | Research on three-dimensional measurement system | Tokyo Seimitsu Co., Ltd. | 07-01-90-03-31-92 |
| | R&D on spiral-type standard flow meter | NEC Instrument Industries | 08-01-90-03-31-92 |
| | High-temperature measurement of material surfaces receiving thermal shocks (II) | Japan Atomic Energy Research Institute | 09-01-90-03-31-92 |
| | Development of magnetic temperature sensor | Anritsu Corporation | 10-01-90-03-31-92 |
| | Research to improve reliability of gas flow meters | Nippon Tairan, Co., Ltd. | 01-01-91-03-31-92 |
| | Research on current testing devices in super clean rooms | Tsukubari Kaseiki, Co., Ltd. | 02-01-91-03-31-92 |
| | Research on pressure measurement techniques and apparatus | Oval Engineering Co., Ltd. | 04-15-91-03-31-92 |
| | Research on frequency constriction stabilization in titanium-sapphire lasers | Komatsu, Ltd. | 04-15-91-03-31-92 |
| | Research on scanning probe microscope for observing organic film | Nikon Corporation | 06-01-91-03-31-92 |
| | Research on practical applications for AE sensor calibration methods used in civil engineering for quantitative analysis of cracking by AE method | Kumamoto University Engineering Department | 06-01-91-03-31-92 |
| | Research on numerical analysis of air flows inside wind tunnel | Computation Research Center | 07-01-91-03-31-92 |
| | Micromachine research using silicon | Functional Logic, Ltd. | 07-01-91-03-31-92 |
| | Research on super high-vacuum AFM | Tokyo University Engineering Department | 07-01-91-03-31-92 |
| | Research on shape measuring technology for megastructures | Nobeyama Cosmic Radio Observatory | 07-01-91-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|---|--|-------------------|
| National Research Laboratory of Metrology | Research on applied measurement technology for phase conjugate waves | Suzuki Corporation | 07-01-91-03-31-92 |
| | Research on precision distance measuring technology used in photoconducting wave path modulators | Nikon Corporation | 08-01-91-03-31-92 |
| | Research on combustible gas detection technology using optical techniques | Osaka Gas Co., Ltd. | 08-01-91-03-31-92 |
| | Research on concentration analysis methods for standard high-purity CO ₂ gas | Chemical Inspection Association | 08-12-91-03-31-92 |
| | Research on development of industrial high-temperature platinum resistance thermometer | Nesshin, Co., Ltd. | 08-20-91-03-31-92 |
| | Research on designing strategy theories for micromachine technology | NRI, Ltd. | 09-02-91-03-31-92 |
| | Research on low-resistant, high-temperature platinum resistance thermometer | Chino Corporation | 09-10-91-03-31-92 |
| | Research on high-sensitivity infrared detection using metallic superconductors | Ibaraki University Engineering Department | 11-01-91-03-31-92 |
| | Research on micromachining for micromachines | Sumitomo Precision Products, Co., Ltd. | 11-01-91-03-31-92 |
| | Research on implementation of high-precision air-speed standards using moving vehicles | Nippon Chemical Industrial Co., Ltd. | 12-24-91-03-31-92 |
| | Research on gas flow standards for nozzles | Shisekiken Co., Ltd. | 01-06-91-03-31-92 |
| Mechanical Engineering Laboratory | Research on ways to apply logical programming environments to create intelligent processing systems in machine design and manufacture | Next-Generation Computer Technology Development Organization | 02-25-91-03-31-92 |
| | R&D on liquid-injection gas engine | Mitsui Engineering and Shipbuilding Co., Ltd. | 02-15-90-03-31-92 |
| | Research on low-temperature ultrasonic microscope scanner | Olympus Optical Co., Ltd. | 10-08-90-03-31-92 |
| | Research on formal drafting of CAD/CAM data conversion processing system | Japan Computer Graphics Association | 12-01-90-03-31-92 |
| | Axially laminated C/C rotor prototyping and strength analysis | Toho Rayon Co., Ltd. | 09-01-91-03-31-92 |
| | Research on high-speed particle collision processing method | Ishikawajima-Harima Heavy Industries Co., Ltd. | 10-07-91-03-31-92 |
| | R&D on diesel exhaust gas trap regeneration technology | Riken Corporation | 11-01-91-03-31-92 |
| | Research on advanced surface modification technology | Machine Technology Association | 01-06-92-03-31-92 |
| | Research on comprehensive models for building next-generation industrial systems | Toyo Engineering Corporation | 02-01-92-03-31-92 |

(Continuation)

| AIST research laboratory | Research project | Research partner | Term |
|--|---|---|--|
| Mechanical Engineering Laboratory (Contd.) | R&D on advanced servo system | Kawasaki Heavy Industries, Ltd., Komatsu, Ltd., TDK Corporation, Sumitomo Seika Chemicals, Co., Ltd., Mitsubishi Heavy Industries, Ltd. | 06-30-90-03-31-92 |
| National Chemical Laboratory for Industry | R&D on new photosensitive materials Research on impact sintering of diamond dust R&D on technology pertaining to search for, and refining of valuable materials from R&D on manufacturing methods for highly functional chemicals (marine uses) Research on conductive organic film Research on secretory production of human lysozyme Research on underwater explosion applications Research on synthesizing sugar derivatives and their functions Research on nitrogen-containing heterocyclic compounds using high pressure Research on catalytic action of niobium film Research on physiologically active platinum compounds Development of high-efficiency CO ₂ separation film R&D on new coolants for compression heat pumps Development of high-performance hydrocatalysts Biodegradable plastics R&D As part of R&D on NO _x removal system by precious metal composite oxide catalysts, basic research on catalysts as well as research to investigate and improve catalysts Research on chemically functional analysis and evaluation materials using synchrotron orbital radiation | Konica Corporation Mitsui Mining Co., Ltd. Marine Biotechnology Research Institute Nippon Mechtron, Ltd. Nippon Oil Co., Ltd. Hosotani Kako, Ltd. Ishihara Pharmaceutical, Ltd. Konica Corporation Toyohashi University of Technology Higashi Nippon Gakuen University Global Environment Research Institute Global Environment Research Institute Global Environment Research Institute Global Environment Research Institute Petroleum Industry Information Center Nippon Oil Co., Ltd. Shukko Kyosan, Ltd. Kosumo Oil Co., Ltd. Kyoa Oil Co., Ltd. Nippon Mining, Ltd. General Sekiyu, K.K. Tonen Co., Ltd. Showa Shell Sekiyu, K.K. | 04-25-89-03-31-92 10-20-89-03-31-92 04-01-90-03-31-92 01-12-90-03-31-92 05-01-90-03-31-92 05-21-90-03-31-92 05-21-90-03-31-92 08-01-90-03-31-92 11-01-90-03-31-92 11-01-90-03-31-92 12-01-90-03-31-92 10-01-90-03-31-92 12-12-90-03-31-92 01-07-91-03-31-92 04-01-91-03-10-92 04-01-91-03-10-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|---|--|-------------------|
| National Chemical Laboratory for Industry | R&D on exocytosis-type molecular recognition and control reaction system | Biotechnology Research Institute | 04-01-91-03-31-92 |
| | Research on electrode materials of hydrogen occlusion alloy electrodes used in nickel-hydrogen batteries | Shin-Kobe Electric Machinery Co., Ltd. | 04-15-91-03-31-92 |
| | Research on carboxypeptidase Y secretory production using yeast | Sankyo Co., Inc. | 04-15-91-09-30-91 |
| | Research on high-pressure impact synthesis by cylindrical implosion | Kumamoto University Engineering Department | 05-01-91-03-31-92 |
| | Research on the photoprocessing of plastic film | Seed Co., Ltd. | 05-15-91-03-31-92 |
| | Research on film separation and carboxylation technology in dicyclic and tricyclic aromatics | Petroleum Industry Information Center | 06-03-91-03-31-92 |
| | R&D on new fluoroplastic materials | Seed Co., Ltd. | 07-10-91-03-31-92 |
| | Research on new catalysts for upgrading coal liquefaction oil | Shokubai Kasei Kogyo Co., Ltd. | 08-01-91-03-24-92 |
| | Research on stable management technology for solid rocket propellant | National Space Development Agency | 08-01-91-03-31-92 |
| | Basic research, and investigative and corrective research, for improving low-temperature activation of M85 diesel automobile exhaust gas purification catalysts | Petroleum Industry Information Center | 08-01-91-03-31-92 |
| | Research on non-destructive detection of dangerous and explosive materials using nuclear quadrupole resonance (NQR) | Hitachi, Ltd. | 09-02-91-03-31-92 |
| | [R&D on advanced functioning creative processing methods] Research on film generation, elements, reactive diagnosis, and furan resin derivatives pertaining to synthesis of highly functional organic materials | Advanced functioning creative processing research associations | 09-03-91-03-31-92 |
| | Research on evaluation of brain coral calcification specimens by fluorescent X-ray element mapping technique | Hospitals affiliated with Tokyo University School of Medicine | 01-20-92-03-31-92 |
| | Research on impact reaction mechanism and sintering of intermetallic compounds | Tokyo University Engineering Department | 01-20-92-03-31-92 |
| | Development of replacement materials for tortoiseshell by integrating natural insect polymers | Tortoiseshell Association of Japan | 01-20-92-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|---|--|-----------------------|
| Government Industrial Research Institute, Osaka | R&D on basic technology for applied marine organisms [R&D on manufacturing methods for highly-functional chemical products (applied marine life)] | Marine Biotechnology Research Institute | 04-01-91- 03-31-92 |
| | Research on gene recombination in microscopic sea plants | Kyowa Hakko Kogyo Co., Ltd. | 04-01-91- 03-31-92 |
| | Research on uses of glass and carbon-fiber reinforced plastic (CFRP) in large structures [joint public-private sector research] | Hyogo Pref Industrial Technology Center; Asahi Glass Co., Ltd.; Nippon Sheet Glass Co. Ltd.; Nippon Steel Corporation Toho Rayon Co., Ltd.; Toray Industries, Inc.; Nippon Oil Co., Ltd.; Mitsubishi Chemical Industries, Ltd.; Mitsubishi Rayon Co., Ltd.; Mitsubishi Heavy Industries, Ltd. | 04-01-91- 03-31-92 |
| | Research on advanced surface treatment technology used in materials processing [key regional technology R&D] | MITI Inspection Office; Fukui Industrial Technology Center; Shiga Industrial Technology Center; Wakayama Industrial Technology Center; Kyoto Pref Small and Medium Enterprise Research Center; Osaka Pref Industrial Technology Research Institute; Osaka Municipal Industrial Research Institute Hyogo Industrial Research Center; Okayama Industrial Research Center; Saga Ceramics Research Institute; Ion Research Institute | 04-01-91- 03-31-92 |
| | Research on carbon hybrids that form lattice-work in 3D textiles | Shikibo, Ltd. | 04-01-91- 03-31-92 |
| | Development of on-site foam adsorbents and evaluation of oil adsorption properties | Toyo Tire and Rubber Co., Ltd. | 04-01-91- 03-31-92 |
| | Research on elucidation of internal structure of pitch carbon fibers | Petoka Co., Ltd. | 04-01-91- 03-31-92 |
| | Research for evaluating long-term durability of solidified glass containers | Power Reactor and Nuclear Fuel Development Corporation | 12-20-91- 03-31-92 |
| | Research on carbon used in lithium storage battery | Osaka Gas Co., Ltd | 04-15-91- 03-31-92 |
| | Research for evaluating high-temperature properties of carbon and carbon composites | High-Temperature Research Institute for Carbon Materials | 07-01-91- 03-31-92 |
| | Research on techniques for analyzing microstructures [R&D on non-linear photoselectron materials] | Asahi Glass Co., Ltd. HOYA Corporation Mitsui Toatsu Chemicals, Inc. Matsushita Electric | 04-01-91- 03-31-92 |

| AIST research laboratory | Research project | Research partner | Term |
|---|---|--|-----------------------|
| Government Industrial Research Institute, Osaka [Contd.] | Research on new solid electrolyte fuel cell | Kansai Electric Power Co., Ltd. Osaka Gas Co., Ltd. Yanmar Diesel Engine Co., Ltd. Misshin Electric Co., Ltd. | 04-01-91- 03-31-92 |
| | Study of methods and total systems for generating large volumes of hydrogen (Contact hydrogenation reactions using CO ₂ fixing and effective utilization R&D) | Global Environment Industrial Research Institute | 04-01-91- 03-31-92 |
| | R&D on heat-resistant composites (leading regional technology R&D) | Osaka Prefectural Industrial Technology Research Institute; Fukui Industrial Technology Center; Wakayama Industrial Technology Center; Osaka Gas Co., Ltd. | 09-02-91- 03-31-92 |
| | Research on ion-beam processing of functional film materials | Himeji Institute of Technology | 09-25-91- 03-31-92 |
| | Research on regulation, evaluation of film catalysts [R&D on advanced functioning creative processing technology] | Advanced Function and Creative Research Association | 10-01-91- 03-31-92 |
| | Research on catalytic properties of semiconductors and composite structures of precious metals [individual creative research training program research area "light and matter"] | Research Corporation of Japan (JRC) | 02-01-92- 03-31-92 |
| | Research on mass and heat transfers in molten glass using temporary micro-gravity environment in aircraft | National Space Development Agency | 03-02-92- 03-31-92 |
| Government Industrial Research Institute, Nagoya | Research on the development of new fluoropolymers | Daikin Industries, Ltd. | 04-25-88- 03-31-92 |
| | Research on measuring melting point of uranium oxide | Nuclear Fuel Industries Co., Ltd. | 08-01-88- 03-31-92 |
| | Research on synthesis of fluorine-based physiologically active compounds | Nihon Oil and Fats Co., Ltd. | 08-15-90- 03-31-92 |
| | Research on high-temperature properties of ceramics | Mitsubishi Gas Chemical Co., Inc. | 08-30-90- 03-31-92 |
| | Research on synthesis of nitrogen-containing perfluoroalkylbromides | Tokem Products Co., Ltd. | 10-15-90- 03-31-92 |
| | Research on synthesis and evaluation of fluorine-containing derivatives of natural physiologically active substances | Nippon Kayaku Co., Ltd. | 12-18-90- 03-31-92 |
| | Research on development of vessel-organ contrast mediums | Midori Juji | 07-01-91- 03-31-92 |
| | Research on microstructural control of composite ceramics | Ibaraki University | 07-01-91- 03-31-92 |

[Continuation]

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|--|--|---|-------------------|
| Government Industrial Research Institute, Nagoya | Research on superconducting ceramics | International Superconductor; Industrial Technology Research Center | 10-01-91-03-31-92 |
| | Research on high-performance thermistor | Nissei Electric Co., Ltd. | 11-01-91-03-31-92 |
| | Research on advanced ceramic bioreactor system | Chuo Equipment and Engineering Co., Ltd. | 12-04-91-03-31-92 |
| | Research on cooling mechanism in coagulation process | Toyo Engineering Corporation | 12-16-91-03-31-92 |
| | Research on near net shape molding by casting | Daido Steel Co., Ltd.; Fuji Electric Co., Ltd.; Nissan Chemical Industries, Ltd. | 07-01-90-03-31-92 |
| | R&D on synthesis of artificial clay for use as new ceramic (artificial clay synthesis technology) (artificial clay applied technology) | Artificial Clay Synthesis Research Association; Mie Pref Ceramics Research Institute; Ishikawa Industrial Technology Institute; Toyama Industrial Technology Center; Gifu Pref Pottery Research Laboratory; Shiga Pref Shigaraki Ceramics Research Laboratory; Aichi Pref Seto Ceramics Technology Center | 10-14-88-03-31-92 |
| | Research on weakly plastic ceramic soil and shaping methods thereof | Ishikawa Pref Kutani Pottery Institute; Ceramic Concepts Research Institute, Tajimi City Marui Togyo Co., Ltd.; Research Institute for Polymers and Textiles | 09-02-91-03-31-92 |
| Institute for Polymers and Textiles | Research on protein crystal growth in microgravity environment | Mitsubishi Heavy Industries, Ltd. | 04-01-91-03-31-92 |
| | R&D on cell/tissue compatible materials | Sumitomo Electric Industries, Ltd. | 07-01-91-03-31-92 |
| | Research on sonic propagation properties of polymer materials | Hitachi Construction Machinery Co., Ltd. | 08-01-91-03-31-92 |
| | R&D on endocytosis-type molecule recognition and control reaction system | Biotechnology Research Institute | 12-01-91-03-31-92 |
| Fermentation Research Institute | R&D on basic marine life application technology | Marine Biotechnology Research Institute | 05-29-89-03-31-92 |
| | R&D on optical control system using physical techniques | Biotech Research Institute | 01-22-90-03-31-92 |
| | Research on improving yeast functions | Godo Shusei Co., Ltd. | 06-08-90-03-31-92 |
| | Investigate and improve microorganisms related to functional group compounds taken from oil components | Petroleum Industry Information Center | 10-01-90-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|--|--|-------------------|
| Fermentation Research Institute [Contd.] | R&D on production process for creating valuable substances by microbial conversion of oil distillates such as polycyclic aromatic hydrocarbons | Petroleum Industry Information Center | 10-01-90-03-31-92 |
| | Oil distillates and microorganism matrices | Nippon Mining Co., Ltd. | 10-01-90-03-31-92 |
| | Development of new enzymes | Showa Sangyo Co., Ltd. | 04-12-91-03-31-92 |
| | Research on growth factor for producing human cell cultures | Yamanouchi Pharmaceutical Co., Ltd. | 04-12-91-03-31-92 |
| | Research on interaction between liver cells and organ cells | Tabai Espec Corporation | 04-12-91-03-31-92 |
| | Dynamic analysis of metabolic balance in yeast | JGC Corporation | 05-01-91-03-31-92 |
| | Stabilization of agglutinating factor in yeast | Toyo Engineering Corporation | 05-01-91-03-31-92 |
| | Analysis of blood vessel formation mechanism and specialization of hemangioendotheliocytes | Aichi Medical University | 11-19-91-03-31-92 |
| | R&D on biodegradable plastics | Global Environment Industrial Technology Research Organization | 12-19-90-03-31-92 |
| | Research to investigate and improve photosynthetic microorganisms | Global Environment Industrial Technology Research Organization | 12-18-91-03-31-92 |
| | Basic research on liver cell breeding factor derived from the spleen | Makawa Seisaku Co., Ltd. Taisho Pharmaceutical Co., Ltd. | 02-18-92-03-31-92 |
| Geological Survey of Japan | Research on technology for precise evaluation methods for AE, rock pressure, and base rock properties in subterranean spaces | Kajima Corp.; Shimizu Corp.; Taisei Corp.; Nikon Corp.; Kurobane Nikon Corp. | 10-20-88-03-31-92 |
| | Research to demonstrate migration of nuclear species within base rock with respect to stratum disposal of high-level radioactive wastes | Power Reactor and Nuclear Fuel Development Corp. | 01-17-92-03-31-92 |
| Electro-Technical Laboratory | SOR basic technology research | Sortech Co., Ltd. | 09-01-88-03-31-92 |
| | Research on usability of fractional information in electronic dictionaries | Electronic Dictionary Research Institute of Japan | 10-14-82-03-31-92 |
| | Research on methods for creating intelligent software using logical programming environment | Next-Generation Computer Technology Development Org. | 02-12-88-03-31-92 |
| | Research on language specifications viewed from a logical language developmental environment | AI Language Research Institute | 04-22-88-03-31-92 |
| | Research on elucidation of electronic structure in high-temperature superconductors used in supercomputers | International Superconductor Industrial Technology Research Center | 10-01-88-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|------------------------------|--|--|-----------------------|
| Electro-Technical Laboratory | Research on analysis and evaluation methods using high-strength, slow-speed positive electron beams | University of Tsukuba | 07-06-89- 03-31-92 |
| | Research on stereovision applications in industrial robots | Sanyo Denki Co., Ltd. | 10-11-89- 03-31-92 |
| | Research on development and evaluation of functional devices | University of Tsukuba | 02-20-90- 03-31-92 |
| | Research on design and evaluation of non-linear optical materials | Kawamura Physiology Research Institute | 06-08-90- 03-31-92 |
| | Research on micromagnetic measuring system using SQUID | Superconductor Sensor Research Institute | 06-08-90- 03-31-92 |
| | Research on gas synthesis mechanism in thin film | Tokyo University Engineering Department | 06-14-90- 03-31-92 |
| | Research on silicon film formation mechanism using plasma | Tokyo Institute of Technology Graduate School; General Science & Engineering Dept. | 06-14-90- 03-31-92 |
| | Research on useful information acquisition and high-speed processing | Science University of Tokyo | |
| | Research on treating materials by high gas pressure using laser optics | Kobe Steel, Ltd. | 06-18-90- 03-31-92 |
| | Research on marine optic-fiber distribution sensing methods | Sumitomo Electric Industries, Ltd. | 06-22-90- 03-31-92 |
| | Research on film growth element processes | University of Tsukuba | 07-05-90- 03-31-92 |
| | Research on dynamic properties of magnetic flux lattices in new superconducting materials | Chino Corporation | 07-25-90- 03-31-92 |
| | Research on basic technology of undulatory radiation | Toshiba Corporation | 08-20-90- 03-31-92 |
| | Evaluation of crystal growth and physical properties of organic superconductors | Himeji Institute of Technology | 10-15-90- 03-31-92 |
| | Computer simulation of solid phase epitaxial growth and calculation of electronic structure of SiO_2/Si interface | University of Tsukuba | 11-06-90- 03-31-92 |
| | R&D on wiring process techniques for Mo sheath PbMo6S8 superconductor wiring using hot extrusion method | Furukawa Electric Company, Ltd. | 11-29-90- 03-31-92 |
| | Research on advanced autonomy of space teleoperators | Toshiba Corporation | 12-26-90- 03-31-92 |
| | Development functional organic optical materials related to molecule distribution and elucidation of mechanism by which non-linear phenomena appears | Dainichi Seika Colour and Chemicals Mfg. Co., Ltd. | 04-15-91 -03-31-92 |
| | Research for discovering new magnetic shielding method for measuring olfactory related brain waves | Shimizu Corporation | 04-15-91 -03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|---|--|------------------------|
| Electro- Technical Laboratory (Contd.) | R&D on model for developing new software structures | Information Processing Association (IPA) | 04-19-91- -03-31-92 |
| | Development of magnetically shielded superconducting galvanometer | Central Research Institute of Electric Power Industry | 05-01-91- 03-31-92 |
| | Development of revolutionary machining process techniques using temporary microgravity environments | Japan Space Environment Usage Promotion Center | 05-14-91- 03-31-92 |
| | Fabrication and evaluation of pigment-laced polymer film using the dry process | Ulvac Corporation | 06-03-91- 10-31-92 |
| | Basic research on developing uses for high-sensitivity flux meters (SQUID) | Seiko Electric Industries Co., Ltd. | 06-20-91- 03-31-92 |
| | SQUID-based electrocardiograph | Fukushima Medical College | 06-20-91- 03-31-92 |
| | Research on radiation damage to silicon carbide laminates (III) | Japan Atomic Energy Research Institute | 07-11-91- 03-31-92 |
| | Research on element technology of CVD diamond film | Kawasaki Steel Corporation | 07-16-91- 03-31-92 |
| | Research on elucidating structure of radiation defects in CaAs | Hosei University | 07-19-91- 03-31-92 |
| | Research on evaluating the precision of secondary standard voltage generators based on the Josephson-effect voltage standard | Japan Electric Instrument In- spection Station; Advantest Co., Ltd.; Yokogawa Electric Corp.; Yokogawa-Hewlett Packard, Ltd.; Furuugu Co., Ltd | 09-02-91- 03-31-92 |
| | Fabrication and microscopic evaluation of semiconductor materials | Hiroshima University Engineering Department | 09-13-91- 03-31-92 |
| | Research on analysis methods for components in aerosols | Science University of Tokyo | 10-01-91- 03-31-92 |
| | Research involving crystal growth experiments in a microgravity environment | Ishikawajima-Harima Heavy Industries, Co., Ltd. | 11-08-91- 03-31-92 |
| | Spectroscopic crystal processing and very high-sensitivity measurement of film impurities | NEC Corporation | 11-15-91- 03-31-92 |
| | Development of III-V compound semiconductor LED materials by ion injection | Nippon Mining Co., Ltd. | 11-30-91- 03-31-92 |
| | Photoelectric separation of ions by synchrotron irradiation | Institute of Physical and Chemical Research | 01-10-92- 03-31-92 |
| | Basic research on high-temperature evaluation of functional devices | Kanagawa Advanced Technology Foundation | 01-31-92- 03-31-92 |
| | Dynamism of interaction between excitation states under intense photo-excitation of molecule aggregate high-concentration dispersion system | Research Corporation of Japan (JRC) | 02-03-92- 03-31-92 |
| | Research on integrated model for building next-generation production system | Toyo Engineering Corporation | 03-02-92- 03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|--|---|---|-------------------|
| Industrial Products Research Institute | Research on development of ceramic molds used for shaping advanced composite materials | Janome Sewing Machine Co., Ltd. | 05-01-91-03-31-92 |
| | Research on methods for measuring and evaluating hand skills | Labor Welfare Corp.; Accident Rehabilitation and Engineering Center | 06-01-91-03-31-92 |
| | Elucidation and evaluation of biochemical properties of certain specimens | Agricultural Technology Research Institute for Silk and Insects Seed Co., Ltd. | 08-01-91-03-31-92 |
| | Development of polyurethane that acts as raw material in extracting coffee lees | UCC Uejima Coffee Co., Ltd. | 11-01-91-03-31-92 |
| | Ultrasonic sensor for detecting urinary desires | Hayashi Denki Co., Ltd. | 02-01-92-03-31-92 |
| Research Institute for Environment and Natural Resources | Research on technology for precise evaluation of AE, rock pressure, and base rock properties in subterranean spaces | Kajima Corp.; Shimizu Corp.; Taisei Corp.; Nikon Corp.; Kurobane Nikon Corp. | 10-20-88-03-31-92 |
| | Research on concrete aging by seawater | Mitsui Mining and Smelting Co., Ltd. | 05-29-89-03-31-92 |
| | Research on eliminating low concentration nitrogen oxides | Fuji Electric Co., Ltd. | 07-17-89-03-31-92 |
| | Development of separation technology for heterocompounds present in liquefied coal oil and uses thereof | Nippon Steel Chemical Co., Ltd. Kobe Steel, Ltd. | 07-20-89-03-24-92 |
| | Research on more advanced control blasting and demolition methods | Hazuma-Gumi, Ltd. Hatori Kensetsu Co., Ltd. Nippon Kayaku Co., Ltd. Nippon Steel Corp. Authorized Mechanical and Electronic Inspection Center | 10-02-89-03-31-92 |
| | Research for evaluating slackness characteristic in mine shaft excavation tests | Power Reactor and Nuclear Fuel Development Corp. | 12-20-89-03-31-92 |
| | Research on polyimide synthesis and carbonization using vapor deposition polymerization method | Ulvac Corp. | 04-04-90-03-31-92 |
| | Research on creating high value-added process for serpentinite | Toho Oribin Industry Co., Ltd. | 04-04-90-03-31-92 |
| | Research on excavation technique that uses hammering and water jets | Japan Basic Technologies, Ltd. | 04-04-90-03-31-92 |
| | Research on long-distance transportation of concrete by vibrating pipelines | Japan Basic Technologies, Ltd. | 04-04-90-03-31-92 |
| | Research on development of spherical hydraulic crushing technique | Central Research Institute of Electric Power Industry Abiko Research Institute | 06-11-90-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|--|--|-----------------------|
| Research Institute for Environment and Natural Resources (Contd.) | Research on greenhouse effect on earth's atmosphere using freon substitute | Asahi Glass Co., Ltd. Science University of Tokyo Science Department | 07-01-90- 03-31-92 |
| | Basic research on long-term transformation and fracturing behavior of rocks | Kyushu University Engineering Department | 11-01-90- 03-31-92 |
| | Research on development of plasma-based freon analyzing device | Tokyo University Engineering Dept.; Tokyo Electric Power Co., Ltd.; JEOL, Ltd.; Nippon Steel Corp.; Nittetsu Technology Information Center | 11-01-90- 03-31-92 |
| | Development of high-performance hydrogenation catalysts | National Chemical Lab For Industry (NCLI); Global Environment Industrial Technology Research Organization | 12-12-90- 03-31-92 |
| | Research on strength evaluation methods for crushing rocks | Kawasaki Chishitsu Co., Ltd. | 04-01-91- 03-31-92 |
| | Basic research on abrasive mixing mechanism of super high-pressure water jet nozzles | Yamagata University Engineering Department | 04-12-91- 03-31-92 |
| | Research on thermochemical treatment methods for organic wastes | Ebara Corp. | 04-12-91- 03-31-92 |
| | Basic research on fuzzy control transport of two-phase solid-liquid flows | Tohoku University Engineering Department | 04-12-91- 03-31-92 |
| | Research on nitrogen oxide treatment methods | Riken Corp. | 04-22-91- 03-31-92 |
| | Research on thermal extraction behavior inside natural fissures | Yamaguchi University Engineering Department | 07-01-91- 03-31-92 |
| | Research on preprocessed brown coal activation | Nippon Kettan Eikka Co., Ltd. | 07-25-91- 03-31-92 |
| | Research on generation of elastic waves by precision blasting | Taisei Corp. | 08-05-91- 03-31-92 |
| | Research for measuring gas concentrations from LPG leaks | Riken Keiki Co., Ltd. | 09-20-91- 03-31-92 |
| | Basic research on mechanical motion control methods | Tohoku University Engineering Department | 10-01-91- 03-31-92 |
| | Basic research on mechanical motion control methods | Muroran Institute of Technology Engineering Department | 10-01-91- 03-31-92 |
| | Research on generation of N ₂ O from coal-fired boilers | Coal Utilization Center | 10-21-91- 03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|--|--|---|--|
| Government Industrial Develop- ment Labora- tory, Hokkaido | Automated methods for snow removal in cold regions | Hokkaido Pref Industrial Research Laboratory; Hokkaido Institute of Technology; Sapporo Eruku Data Corner, Ltd.; Nippon Snow Removal Co., Ltd.; NEC Corp.; Nippon Road Co., Ltd. Kaihatsu Koken, Ltd.; Aiken Kogyo Co., Ltd.; Source High Tech, Ltd. | 01-11-88- 03-31-92 |
| | Research on medical diagnosis system based on information transmission | Sapporo Meiwa Hospital Rakuno Gakuen University Shiawaku Co., Ltd | 04-01-90- 03-31-92 |
| | Perfecting feed technology for farm by-products based on solid fermentation | Hokkaido Takigawa Livestock Research Laboratory | 04-01-90- 03-31-92 |
| | Relation between raw material properties and reactivity, and nuclear reactivity in coal and char | Hitachi, Ltd. Babcock Hitachi, Ltd. | 07-29-91- 03-31-92 07-22-91- 03-31-92 |
| | Research on heat pumps for cold regions | Maekawa Manufacturing Co., Ltd. | 09-17-91- 03-31-92 |
| | Pilot study of coal preprocessing | Coal Technology Research Institute | |
| | Fabrication of composite metal oxide catalysts by sol-gel method | Nissan Motor Co., Ltd. | 01-19-92- 03-31-92 |
| | Elucidation of deposit formations inside preheaters in coal liquefaction process | Nippon Kattan Erika Co., Ltd. | 12-01-89- 03-31-92 |
| Government Industrial Research Institute, Kyushu | R&D on fine coal materials | Asuku Co., Ltd.; Aso Cement Co., Ltd.; Ueda Lime Manufacturing Co., Ltd.; Okutama Industries, Ltd.; Onoda Cement Co., Ltd.; Kawai Lime, Ltd.; Kurimoto Steel Works, Ltd.; Sumitomo Cement Co., Ltd.; Chichibu Lime, Ltd. Toyo Denka Kogyo, Ltd.; Nitchin Co., Ltd.; Nippon Kakoh Seishi K.K.; Fukuoka Industrial Technology Center; Saga Industrial Research Laboratory; Kumamoto Industrial Technology Center; Oita Industrial Research Laboratory; Okinawa Industrial Research Laboratory; Okayama Industrial Technology Center | 10-13-88- 03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|--|---|--|-------------------|
| Government Industrial Development Laboratory, Hokkaido | Research for developing new pottery clay using low-fire pottery stones as raw material | Saga Ceramics Research Laboratory; Nagasaki Ceramics Research Laboratory; Kumamoto Industrial Technology Center; Kagoshima Industrial Technology Center Amakusa Pottery Stone Industrial Cooperative; Dai Arita Pottery Promotion Cooperative | 07-10-80-03-31-92 |
| | Research on prevention of hydrogen embrittlement in zinc-plated iron and steel materials | Fukuoka Industrial Technology Center | 07-01-81-03-31-92 |
| | Research on synthesis and development of functions in inorganic stratified polymers | Mitsubishi Gas Chemical Co., Ltd.; Kohpu Chemical Co., Ltd.; Teika Co., Ltd. | 07-01-80-03-31-92 |
| Government Industrial Research Institute, Shikoku | R&D on recycling system for composite materials 1. Research on dismantling, crushing, and classifying FRP waste | Kagawa Prefecture; Shin-Kochi Heavy Industries, Ltd.; Shikoku Kiki Co., Ltd.; Shikoku Passenger Train Co., Ltd.; Nissin Kikai Co., Ltd.; Hashimoto Special Industries Co., Ltd.; Mitsui Engineering and Shipbuilding Co., Ltd.; Tatemitsu Industries, Ltd. | 12-01-88-03-31-92 |
| | R&D on recycling system for composite materials 2. Research on dismantling, crushing, and classifying FRP waste | Nihon Spindle Manufacturing Co., Ltd. | 12-01-88-03-31-92 |
| | R&D on recycling system for composite materials 3. Research on recycling FRP waste (direct uses) | Ehime Prefecture; Kochi Prefecture; Okura Industries, Ltd.; Daiki Co., Ltd.; Marusen Kagaku Co., Ltd. | 12-01-88-03-31-92 |
| | R&D on recycling system for composite materials 4. Research on recycling FRP waste (disintegration uses) | Kochi Prefecture; Tokushima Prefecture; Toyo Denka Kogyo Co., Ltd.; Toyo Engineering Works, Ltd.; Shin-Kochi Industries, Ltd. | 12-01-88-03-31-92 |
| | Research on development of acidic polysaccharide fiber functions and application in electronic and acoustic materials | Mogami Denki Co., Ltd. Pioneer Electronic Corp. | 08-04-88-03-31-92 |
| | Research on development of biodegradable sheets 1. Developing technology for manufacturing fiber sheet molding | Kansai Juyo Kogyo Co., Ltd. | 05-29-89-03-31-92 |
| | Research on development of biodegradable sheets 2. Development technology for manufacturing industrial molding | Oishi Sangyo Co., Ltd. Iwaki Noki Co., Ltd. | 05-29-89-03-31-92 |
| | Research on development of biodegradable sheets 3. Development technology for manufacturing porous molding | Nishikawa Rubber Industries, Ltd. | 05-29-89-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|--|--|-----------------------|
| Government Industrial Research Institute, Shikoku (Contd.) | Research on development of biodegradable sheets 4. Development technology for manufacturing industrial sheets | Okura Industries, Ltd. | 05-28-89- 03-31-92 |
| | Research on development of biodegradable sheets 5. Development technology for manufacturing industrial sheets | Aisero Kagaku Co., Ltd. | 05-28-89- 03-31-92 |
| | Research on inorganic phosphate textiles | Toyo Denka Kogyo Co., Ltd. | 05-21-90- 03-31-92 |
| | Refining pectin and developing new technology for its uses | Fushimi Pharmaceutical Co., Ltd. | 06-11-90- 03-31-92 |
| | Research on applications for insoluble alginic fiber that contains bacterial- resistant zeolite | Takamitsu Co., Ltd. | 06-14-90- 03-31-92 |
| | Research on development of more advanced flame-coating process | Tokushima Prefecture Kagawa Prefecture Kochi Prefecture Okayama Prefecture | 09-18-90- 03-31-92 |
| | Research on sensing and modeling of crane vibrations | Kochi Prefecture (Kochi Industrial Technology Center) | 04-15-91- 03-31-92 |
| | Research on ion and laser beam based metal finishing | Tokushima University, Industrial Junior College Tokushima University Engineering Department | 05-17-91- 03-31-92 |
| | Research on use of laser beams to obtain high functionality in powder- based surfaces | Shin-Niihama Industrial High School and College Sumitomo Heavy Industries Forging Co., Ltd. | 09-05-91- 03-31-92 |
| | Research on whisker-reinforced aluminum composites | Kagawa University Okayama Prefecture Kanadatoshi, Co. Ltd. Shikoku Kasei Co., Ltd. Tadano Co., Ltd. Toyo Denka Industries, Ltd. | 11-07-91- 03-31-92 |
| GIRI, Tohoku | Research on replacement materials for tortoiseshell based on development of natural polymer compounds | Tortoiseshell Association of Japan | 01-27-92- 03-31-92 |
| | Research on use of ultrasonic images to conduct flow analysis on opaque thermoplastic resin based products | Hitachi Chemical Mold Co., Ltd. | 09-10-90- 03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|--|---|---|---|
| Government Industrial Research Institute, Tohoku [Contd.] | <p>Research on comprehensive evaluation method for composite structures by internal inspection system</p> <p>Research on biotechnology applications in local natural resources</p> <p>Research on fabrication and application of swelled silicates</p> <p>Research on perfecting industrial manufacturing method for hectorite and stevensite</p> <p>Research on gravitational effects on material manufacturing process that accompany gas-phased chemical reactions</p> <p>Research on residual stress in partially-stabilized zirconia and stainless steel zygotes</p> <p>Research on development of flux meter for air-tight water conduits</p> | <p>Aomori Prefecture; Iwate Prefecture; Akita Prefecture Miyagi Prefecture; Yamagata Prefecture; Fukushima Prefecture Nitto Chemical Industry Co., Ltd.; Ben Iwate Kojo, Ltd.; Sugiura Manufacturing Co., Ltd.; Tohoku Ricoh Co., Ltd.; Nippon Ceratech Co., Ltd.; Tohoku Special Steel Co., Ltd.; Asaka Riken Industries, Ltd.; Kokken Denshi Co., Ltd.; Hitachi Construction Machinery Co., Ltd.; Tokimeku Co., Ltd.; Honda Kinzoku Gijutsu, Ltd.; Komatsu Ltd.; Nippon Emerson Co., Ltd.; Tohoku University; Yamagata University</p> <p>Akita Prefecture</p> <p>Kohpu Chemical Co., Ltd.</p> <p>Kunimine Industries, Ltd.</p> <p>Mitsubishi General Research Institute</p> <p>Tohoku University Engineering Department</p> <p>Sanden Kogyo Co., Ltd.</p> | 09-10-90-03-31-92 12-01-90-03-31-92 04-01-91-03-31-92 08-01-91-03-31-92 01-10-92-03-31-92 02-01-92-03-31-92 02-20-92-03-31-92 |
| Government Industrial Research Institute, Tohoku, North Laboratory | Research on development of high-selection means for separating metallic elements based on advanced molecule recognition function | Mitsubishi Chemical Industries, Ltd. Hitachi Chemical Co., Ltd. Asaka Riken Industries, Ltd. Rasa Industries, Ltd. Nippon Rensui Co., Ltd. | 07-01-91-03-31-92 |
| Government Industrial Research Institute, Chugoku | <p>Basic research on mechanism that forms turbid fronts in coastal areas</p> <p>Basic research on mechanism that transports matter in stagnated ocean areas</p> | Hiroshima University Yuge Higher Mercantile Marine School | 04-01-91-03-31-92 08-05-91-03-31-92 |

[Continuation]

| AIST research laboratory | Research project | Research partner | Term |
|---|--|--|-----------------------|
| Government Industrial Research Institute, Chugoku (Contd.) | Technology for evaluating the design process for precise molding of freely curved surfaces | Tottori Industrial Research Laboratory; Tottori Industrial Technology Center; Okayama Industrial Technology Center; Hiroshima Industrial Technology Center, West; Hiroshima Industrial Technology Center, East; Yamaguchi Industrial Technology Center; Mitsutoyo Co., Ltd. Chugoku Industries, Ltd. Nippon System Design Co., Ltd. Interface Co., Ltd. Sanei Technologies Co., Ltd. Aimekkusu Co., Ltd. Mazda Motor Corp. Ishikawajima-Harima Heavy Industries Co., Ltd. Mitsubishi Motors Corp. Metasoft-Fuji Co., Ltd. Japan Steel Works, Ltd. System Instrumentation Co., Ltd. Nissin Steel Co., Ltd. Sharp Corp. Sakurai Kikai Co., Ltd. Kasen Nozzle Manufacturing Co., Ltd.; IPD Co., Ltd. Sanin Microcomputer Center MIT System Development Co., Ltd. Sankyo Seiko Co., Ltd. Hiro Tech Co., Ltd. Nippon Press Co., Ltd. Katayama Industries, Ltd. Hiruta Industries, Ltd. Sanyo Brake Co., Ltd. Kinki University | 12-27-91- 03-31-92 |
| | Basic research on OR technology | Hiroshima Shudo University | 04-01-91- 03-31-92 |
| | Research on development and evaluation of vibration damping materials | Shimane Industrial Technology Center Daihatsu Metal Industries, Ltd. Shinkawa Denki, Ltd. Co. | 04-01-91- 03-31-92 |

3. Public-Private Sector Joint Research Program

The technological development of private companies in Japan is shifting from the traditional means where companies import technologies from abroad to new way in which companies base their growth on applied research and practical research oriented toward commercialization and industrialization, but when we consider the current technological level and developmental potential of Japan, we can see that stronger emphasis must be placed on fundamental research and development.

Research and development in fundamental and basic fields, however, carries with it major technological and economic risks, so it is hard to say whether such R&D will be fully implemented by private companies in Japan.

On the other hand, ever since the establishment of AIST research laboratories, we have seen a steady accumulation of practical results in the area of fundamental research, so the research potential is extremely high when we observed from that perspective.

In order to more effectively promote fundamental research in Japan, AIST initiated the Private-Public Sector Joint Research Program in 1985 with the specific aim of implementing joint research that would take maximum advantage of the fundamental research potential in AIST research laboratories and be organically linked with the human and financial potential of private industry.

In the former joint research systems, government research laboratories would promote research and development through the private sector, but that system was similar to allocating research as there was no research exchange or shared use of equipment. It would be an overstatement to say that much success was made of this program, particularly since there were no budgetary actions taken by the government. The new joint research program, however, enables centralized joint research by establishing organic links between the public and private sector. This research includes the joint use of equipment owned by AIST research laboratories as well as equipment owned by the private industry.

(1) Priority research topics

These are research topics in which public interest is thought to be particularly high. These topics are concerned with fundamental research required to build the industrial base, and joint research between private companies and AIST research laboratories in high priority areas.

(2) Research implementation

[1)] The research will be implemented in AIST research laboratories or at private corporations depending on the needs at the time.

2) Use of research equipment

To generate effective joint research based on organic links between the public and private sector, AIST research laboratories will accept

private researchers (civilians), allow private research equipment to be used, and allow private researchers to use research equipment owned by the AIST research laboratories free of charge.

In addition, the government will send researchers to private companies as the need arises (official business visit).

3) **Research and development funding**

Personnel costs will be handled separately. In terms of the equipment needed for research, there will be no charge to either party for the use of each other's equipment. New equipment, supplies, and utilities that will be paid for according to the respective share of research being implemented by each party.

4) **Contributing equipment**

It will also be possible for privately owned companies which have brought their own equipment to an AIST research laboratories for the purposes of joint research to donate that equipment to the AIST research laboratory if it is thought to be too expensive to remove the equipment once the joint research is complete, or if the equipment was designed exclusively for a particular joint research project, or if it was built so that it could continue to be used in the future by the AIST research laboratory.

The research findings made during joint research will become joint public-private property.

FY92 Budget- ¥250 million

Joint Public-Private Research Projects (1 July 1992)

| Research project | AIST laboratory | Research term | Research partner |
|--|---|---------------|---|
| Advanced control blasting and demolition techniques | NRI for Environment and Resources | 1989-1992 | Hazuma-Gumi, Ltd.; Hatori Construction Co., Ltd.; Nippon Steel Corp. Nippon Kayaku Co., Ltd.; Association for Official Machinery and Electronics Testing |
| Synthesis and development of functions in inorganic stratified polymers | GIRI, Kyushu | 1990-1993 | Mitsubishi Gas Chemical Co., Ltd. Koppu Chemical Co., Ltd. |
| Development of near net shape molding by casting | GIRI, Nagoya | 1990-1993 | Daido Steel Co., Ltd.; Nissan Chemical Industries, Ltd.; Fuji Electric Co., Ltd. |
| R&D on advanced servo system | Mechanical Engineering Laboratory | 1990-1992 | Kawasaki Heavy Industries, Ltd.; Sumitomo Seika Chemicals Co., Ltd.; Komatsu Ltd. Mitsubishi Heavy Industries, Ltd.; TDK Corp. |
| Applications of glass and carbon-fiber reinforced plastic (CFRP) in large structures | GIRI, Osaka | 1990-1992 | Asahi Glass Co., Ltd.; Nippon Sheet Glass Co., Ltd.; Central Glass Co., Ltd.; Toho Rayon Co., Ltd.; Nippon Oil Co., Ltd.; Osaka Gas Co., Ltd.; Nippon Steel Corp. Mitsubishi Rayon Co., Ltd.; Mitsubishi Chemical Industries, Ltd.; Hyogo Industrial Technology Center; Mitsubishi Heavy Industries, Ltd. |
| Development of high-speed Josephson integration system | Electrotechnical Laboratory | 1990-1992 | NEC Corp. Kyocera Corp. |
| Development of highly selective separating agent for metallic elements based on advanced molecule recognition function | GIRI, Tohoku GIDL, Hokkaido | 1991-1994 | Mitsubishi Chemical Industries, Ltd.; Hitachi Chemical Co., Ltd.; Rasa Industries, Ltd.; Nippon Rensui Co., Ltd.; Asaka Riken Co., Ltd. |
| Development of advanced functions in physiologically active substances through use of synthetic polymers | Research Institute for Polymers and Textiles | 1991-1993 | Sankyo Co., Ltd.; Bioscience Research Institute; Polar Chemical Industries, Ltd.; New Pharmaceutical Research Institute |
| New alloys with evenly distributed particulate in micro-gravity environment | GIDL, Hokkaido | 1992-1994 | Yamatake-Honeywell Co., Ltd. Japan Steel Works, Ltd. |
| Advanced three-dimensional measurement techniques for large structures | NRL of Metrology | 1992-1994 | Tokyo Keiso Co., Ltd.; Nikon Corp.; Tadano Corp.; Idec Izumi Corp. |
| Research on evaluating behavior and designing stability in large base rock wall surfaces | Geological Survey of Japan, NRI for Environment and Resources | 1992-1996 | Nishimatsu Construction Co., Ltd. Mitsui Construction Co., Ltd. Hazuma-Gumi, Ltd. |

Joint Public-Private Research Project Descriptions

(July 1, 1992)

| Research project | Research project description |
|--|---|
| Research on advanced control blasting and demolition techniques | This project involves research on explosive-based demolition methods for urban buildings. In addition to controlling explosions in each demolition project, trying to develop more advanced demolition method, and preventing low-frequency sonic booms, the research will focus on the technical problems of demolition safety in Japan. |
| Research on synthesis and development of functions in inorganic stratified polymers | In addition to synthesizing new fluoromica with excellent high-frequency and optical properties with a non-conventional mechanism, and elucidating the electrical and optical properties therein, this project focus on the development of a continuous production system for fluoromica, as well as R&D on high-tech electronic materials, special light-sensitive pigments, and non-combustible sheets. |
| Research on development of near net shape molding by casting | By developing a method for molding near net shapes by casting hard metals such as titanium and titanium-aluminum, this research will focus on (1) development of a high-precision mold that will not react with those materials, and (2) injection of pure solvents into a vacuum or inert gas atmosphere, (3) production materials and systems that can supply manufactured goods to advanced industries. |
| R&D on advanced servo systems | The development of an advanced servo system has been long sought after as a basic technology for various industries including machinery, electronics, and aerospace. This research will involve trial manufacture and motion evaluation experiments on a super high-performance servo system that uses super-magnetostrictive elements as actuators, and on an innovative optical servo system that resolves the basic flaws that exist in conventional servo systems. This research involves the merger of electrical and mechanical systems which is known as mechatronics. The information generated will be used as basic material for designing an advanced servo systems that can meet the technological demands of the future. |
| Research on use of glass and carbon-fiber reinforced plastic (CFRP) in large structures | In order to achieve free unrestricted designs in modern architecture, it is essential that the glass materials used exhibit excellent transparency and workability, and that the carbon fiber reinforced plastic used exhibit great strength and hardness. Based on those materials, this research will investigate the long-term permanence required in materials used in large structures, and on element technologies for fabricating and conducting non-destructive inspection of major components. |
| Research on high-speed Josephson integration system | The objective is to achieve very high speed and low power consumption in a Josephson computer system. This research will focus on development of a high-speed method for driving logic and memory circuits, which are critical in configuring a Josephson integration system. More specifically, the research will involve development of a ceramic substrate that will be used to generate high speed operations in a Josephson chip. |
| Research on development of highly selective separating agent for metallic elements based on advanced molecule recognition function | In advanced production where the development of modern new materials plays a central role, it is essential that there be a stable supply of highly pure rare metals for use as raw materials, and likewise essential, there be a more sophisticated method for separating metals based on composition analysis for conducting process and quality management of new material products. This research will focus on how to create new materials and reagents which have the ability to recognize metal ions and metal complexities by making compounds of chain-shaped reagents and large-molecule organic polymers that react selectively with metal ions such as rhodium, niobium, and rare earth elements. The knowledge gained will be used to develop a method for isolating and recovering resource metals, i.e. rare metals, and a method for isolating and analyzing purity levels for ultra-small quantities. |

| Research project | Research project description |
|--|---|
| Research on development of advanced functions in physiologically active substances through use of synthetic polymers | The rapid growth of biotechnology in recent years has led to the production of large amounts of various physiologically active substances such as interferon, growth hormone, and cancer-resisting agents, but many of these materials cannot be used because their effectiveness has not been fully documented and some have proven to be toxic. There is thus a demand for an applied technology with regard to these substances. The aim of this research will be to concentrate on substances that appear to be effective against cancer and develop a technology for making the physiologically active substances more functional through the use of synthetic polymers. |
| Research on creation of new alloys with evenly distributed particulate in microgravity environment | The aim of this research is to create a whole martensite crystal that exhibits excellent wear resistance, corrosion resistance, and heat resistance by melting powdered metal in a microgravity environment and producing an iron alloy with an even distribution of particulate throughout. Therefore, using a drop test facility in which a temporary microgravity environment can be produced, this research will focus on developing an effective method for fabricating this material. The structure of the new composite material will then be analyzed and its properties evaluated. |
| Research on advanced three-dimension measurement techniques for large structures | In order to perfect an advanced three-dimensional measurement and evaluation technology for large structures such as tanks and cranes, this research will focus on developing a method for taking long-distant measurements by laser, a laser tracking method for optical measurements of three-dimension positions, developing a use for optic-fiber technology for anti-explosion purposes, a method for evaluating quantities by means of measuring pressure, and a method for compensating for the pneumatic refraction factor. |
| Research on evaluating behavior and designing stability in large base rock wall surfaces | In order to prevent breakup and disintegration of large base rock wall surfaces in strip mines and underground tunnels, this research will focus on the development of a technology for elucidating the mechanism at work, devising a means for detecting it beforehand, and that incorporating that knowledge into safety operations. To accomplish that goal, this research will try to elucidate and evaluate the detailed behavior of underground water in discontinuous surfaces within base rock. |

4. Commissioned Research

Official business visits by AIST employees for the purpose of inspecting and/or examining weighing machines or mining equipment (Measurement Law and Mining Safety Act), inspecting overseas research activities, or rendering technical assistance at the request of private corporations are conducted in accordance with Regulations Governing AIST Official Business Visits. There has been no commissioned research implemented since 1990.

Regulations Governing AIST Official Business Visits

47-10-2422
5 October 1972

(Range of Application)

Article 1. In the event that a research laboratory operated by the Agency of Industrial Science and Technology is asked by an outside organization to send official(s) to their facilities on official business for the purpose of inspecting, testing, analyzing, consulting, mediating, or providing technical assistance, hereinafter called official business visit, such official business visits shall be governed by these regulations as well as by Regulations Governing MITI (Ministry of International Trade and Industry) Official Business Visits (1947 Ministry of Trade and Commerce Ordinance No. 3) with the exception of the following cases, official business visits based on the Measurement Law (1951 Law No. 207) for making inspections and examining weighing machines, and official business visits based on the Mining Safety Act (1949 Law No. 70) for mine inspections.

(Application Form)

Article 2. The party making the request for an official business visit, hereinafter called the requesting party, by official(s) of an AIST research laboratory official, must submit an official business visit application and list of materials needed for the official business visit to the director of an AIST research laboratory, hereinafter called AIST research laboratory director, using Official Business Visit Form 1.

(Assignment)

Article 3. When a AIST research laboratory director intends to make an official business visit, he/she shall notify the requesting party using Official Business Visit Consent Form 2.

Article 4. [1.] If an official business visit is deemed unnecessary or cannot be done, the AIST research laboratory director may decline the application.

2. If an application is declined, the AIST research laboratory director shall notify the requesting party of that decision as soon as possible.

(Canceling Official Business Visits)

Article 5. The AIST research laboratory director may cancel the official business visit when there is concern that execution of research laboratory work will be adversely affected, or when continuation of that visit would be difficult to do because of a natural disaster or some other unforeseen circumstance.

(Official Business Visit Expenses)

Article 6. When notification is received as provided for in Article 3, the requesting party must pay the approximate expenses for the following items up to the specified time stated in the Official Business Visit Consent Form. For (1), however, the AIST research laboratory director may let the requesting party pay an adjusted amount if prior approval has been given by the AIST director-general.

- (1) In the event the official business visit is made for the purpose of testing, analyzing, consulting, test manufacturing, coordinating, or processing, hereinafter called testing and analysis, etc., the costs shall be based on the fees stipulated in Article 8 of the Regulations Governing AIST Testing, Analysis, and Use of Equipment (1949 MITI Ordinance No. 54) and on (2a) below.
- (2) The following expenses are for official business visits for the purpose of testing and analysis, etc.:
 - a. **Travel Expenses**
This amount is calculated according to the law governing travel expenses of government employees (1950 Law No. 114)
 - b. **Per Diem**
The per diem amount covers personal expenses during the official business visit and is based on Cost Guidelines for Calculating Research by AIST Research Laboratories, hereinafter called Cost Guidelines, issued separately by the AIST director-general.
 - c. **Machinery and Tool Rental**
This is a depreciation expense provided for in the Cost Guidelines that is based on the purchase price of tools and machinery.
 - d. **Communication Expense**
This expense includes necessary communication costs incurred during an official business visits.
 - e. **Preparatory Expenses**
In the case of official business visit expenses for the purpose of conducting geophysical exploration and drilling surveys in search of mineral deposits or water veins (includes hot springs), this amount represents the survey expenses incurred outside the period of the official business visit and recognized as necessary by the

5. Research Support

As was stated in Chapter 1, the research laboratories affiliated with AIST share basic research with each other. One of the responsibilities of AIST is to widely disseminate the technology and know-how that has been accumulating over many years.

In the meantime, AIST research laboratories have been receiving strong demands for technical assistance and consultation regarding fundamental and basic research.

Therefore, in 1957, AIST decided to open a technical assistance center in at its main headquarters. Later, it opened technical assistance centers at affiliated research organizations. Those parties desiring technical assistance should contact a technical assistance center (or technical exchange and promotion center) at any of the AIST research laboratories.

In accordance with Article 2 of the Regulations Governing Inventions Made with AIST Technical Assistance, which was approved by the Diet on February 25, 1972, each research laboratory must exchange written confirmations with the organizations which whom it is rendering assistance concerning how inventions pertaining to said technical assistance will be administered given the possibility of an invention.

AIST has established what are called liaison committees to facilitate research exchanges, help with staff training, and build cooperation with public examination and technology centers. These were first formed in 1954 in order to raise the technological level of local industries, particularly growth industries, and to place more emphasis on R&D in local public research institutions.

1992 Technical Assistance and Consultation

| Year | FY88 | | FY89 | |
|--|--------|--------|--------|--------|
| | Assist | Advise | Assist | Advise |
| Research laboratory | | | | |
| National Research Laboratory of Metrology | 21 | 1,089 | 24 | 374 |
| Mechanical Engineering Laboratory | 75 | 564 | 80 | 480 |
| National Chemical Laboratory for Industry | 114 | 1,149 | 92 | 1,024 |
| Government Industrial Research Institute, Osaka | 128 | 2,890 | 103 | 2,168 |
| Government Industrial Research Institute, Nagoya | 147 | 1,671 | 134 | 1,240 |
| Fermentation Research Institute | 62 | 1,352 | 73 | 1,391 |
| Research Institute for Polymers and Textiles | 58 | 329 | 43 | 358 |
| Geological Survey of Japan | 8 | 1,101 | 54 | 1,418 |
| Electrotechnical Laboratory | 118 | 751 | 172 | 700 |
| Industrial Products Research Institute | 45 | 255 | 40 | 208 |
| Research Institute for Environment and Natural Resources | 48 | 745 | 38 | 732 |
| Government Industrial Development Laboratory, Hokkaido | 35 | 324 | 39 | 336 |
| Government Industrial Research Institute, Kyushu | 28 | 935 | 29 | 805 |
| Government Industrial Research Institute, Shikoku | 18 | 460 | 16 | 405 |
| Government Industrial Research Institute, Tohoku | 22 | 113 | 17 | 100 |
| Government Industrial Research Institute, Chugoku | 17 | 178 | 9 | 112 |
| Total | 934 | 13,906 | 963 | 11,848 |

(Continued)

| Year | FY90 | | FY91 | |
|--|------------|---------------|------------|---------------|
| | Assist | Advise | Assist | Advise |
| Research laboratory | | | | |
| National Research Laboratory of Metrology | 23 | 927 | 21 | 980 |
| Mechanical Engineering Laboratory | 81 | 461 | 77 | 410 |
| National Chemical Laboratory for Industry | 80 | 953 | 73 | 821 |
| Government Industrial Research Institute, Osaka | 96 | 1,668 | 62 | 2,792 |
| Government Industrial Research Institute, Nagoya | 107 | 1,057 | 86 | 1,005 |
| Fermentation Research Institute | 102 | 1,410 | 111 | 1,291 |
| Research Institute for Polymers and Textiles | 39 | 322 | 35 | 311 |
| Geological Survey of Japan | 7 | 1,630 | 4 | 1,242 |
| Electrotechnical Laboratory | 154 | 850 | 156 | 850 |
| Industrial Products Research Institute | 37 | 238 | 76 | 244 |
| Research Institute for Environment and Natural Resources | 42 | 755 | 44 | 652 |
| Government Industrial Development Laboratory, Hokkaido | 37 | 280 | 30 | 285 |
| Government Industrial Research Institute, Kyushu | 29 | 519 | 27 | 410 |
| Government Industrial Research Institute, Shikoku | 22 | 334 | 17 | 336 |
| Government Industrial Research Institute, Tohoku | 16 | 147 | 10 | 108 |
| Government Industrial Research Institute, Chugoku | 3 | 153 | 5 | 181 |
| Total | 875 | 11,715 | 834 | 11,927 |

Regulations Governing Inventions Made with AIST Technical Assistance

47-10--345

25 February 1972

The Regulations Governing Inventions Made With AIST Technical Assistance are provided as follows:

(Purpose)

Article 1. These regulations govern the administration of inventions made in conjunction with technical assistance rendered by a research laboratory operated by the AIST, hereinafter called AIST research laboratory.

(Written Confirmation)

Article 2. In the event the possibility exists that an invention might be pertaining to technical assistance being rendered by an AIST research laboratory, the director of said research laboratory, hereinafter called AIST research laboratory director, shall, in accordance with these provisions, exchange written confirmations beforehand with the party receiving technical assistance, hereinafter called the party receiving assistance, concerning how said invention pertaining to technical assistance being received shall be administered.

(Separate Application)

Article 3. [1.] If an employee belonging to an AIST research laboratory makes an invention on his/her own pertaining to technical assistance being rendered, the director-general of AIST, hereinafter AIST director-general, shall file for a patent independently.

2. If an employee belonging to the party receiving assistance makes an invention on his/her own pertaining to the technical assistance being rendered, the written consent of the AIST director-general shall be obtained before the party receiving assistance files for a patent on said invention.

(Joint Application)

Article 4. If an employee belonging to a research laboratory and an employee belonging to the party receiving assistance make an invention jointly pertaining to the technical assistance being rendered, the AIST director-general shall file for a joint patent with the party receiving assistance. This regulation does not apply, however, if provided in the agreement that the AIST director-general shall have independent patent rights.

(Application Authority)

Article 5. [1.] The AIST director-general may delegate the patent application power provided in Article 2 to an AIST research laboratory director.

2. The AIST research laboratory director shall submit a written report to the AIST director-general concerning the details of the transaction referred to in Article 2 immediately upon completing the required procedures.

(Third Party Licensing)

Article 6. If it clearly thought to be in the best public interest to license the rights to a patent connected with an invention made by the party receiving assistance based on the provisions in Article 3, Item 2, or patent rights acquired on the basis thereof, hereinafter called patent rights of party receiving assistance, to a party other than the party receiving assistance, hereinafter called the third-party, the AIST director-general may instruct the party receiving assistance to license the patent rights, etc. of said party receiving assistance to a third party designated by the AIST director-general within a range of conditions also designated by the AIST director-general.

(Granting Third Party Licensing)

Article 7. [1.] The rights to obtain a patent as provided in Article 4, or patent rights acquired on the basis thereof, hereinafter called jointly-held patent rights, may be licensed to a third party by the AIST director-general when one of the following conditions applies.

- (1) The party receiving assistance, without good reason, fails to license said patent rights within two years after the technical assistance term has expired.
- (2) If after completing the term for technical assistance, it is thought to be in the best public interest to license said joint patent rights to a third party.

2. If licensing is granted to a third party based on the preceding provision, the AIST director-general may grant said licensing on his/her own notwithstanding Article 73, Item 3 of the Patent Law.

(Royalties)

Article 8. [1.] When a party receiving technical assistance decides to license joint patent rights, the AIST director-general shall assess a royalty as stipulated in a separate licensing agreement. The royalty assessed in that case shall be an amount corresponding to the share owned by the AIST director-general in said rights.

2. The royalties for joint patent rights collected from a third party shall be returned to the AIST director-general and party receiving assistance proportionate to their share in said rights.

(Applicability)

Article 9. The provisions from Article 2 to the preceding article, apply to design rights and design registration rights, as well as utility model rights and utility model registration rights.

(Addendum)

These regulations take effect from the day of promulgation.

Written Confirmation On Administering Inventions Made With AIST Technical Assistance

The director _____, of _____ (AIST research laboratory), hereinafter called Party A, and the president and chief executive officer, _____, of _____, hereinafter called Party B, do hereby confirm the following items in connection with technical assistance rendered by Party A to Party B pertaining to _____.

(Reversion of Patent Rights)

Article 1. The rights to obtain a patent pertaining to inventions made in connection with technical assistance rendered, hereinafter called technical assistance related inventions, or any patent rights so obtained on the basis thereof, shall revert to the director-general of AIST, hereinafter called AIST director-general with the exception of provisions stipulated in Article 2 and Article 3.

(Separate Application)

Article 2. If an employee of Party B decides to file for a patent on invention that he/she has made on their own pertaining to technical assistance rendered, Party B shall obtain the prior consent of Party A before filing for a patent.

(Joint Application)

Article 3. If an employee of Party A and employee of Party B make an invention jointly related to the technical assistance, Party A and Party B shall file for a patent jointly.

(Third Party Licensing)

Article 4. If it clearly thought to be in the best public interest to license the rights of a patent connected with an invention made by Party B based on the provisions in Article 3, Item 2, or to license the patent rights acquired on the basis thereof, hereinafter called Party B patent rights, to a party other than Party B, hereinafter called the third-party, the AIST director-general may instruct Party B to license the patent rights, etc. of Party B to a third party designated by the AIST director-general within a range of conditions also designated by the AIST director-general.

Note: This article may be deleted if circumstances do not apply to the article.

If the article is deleted, substitute Article 4 with Article 5 and do the same with each of the succeeding articles.

(Granting Third Party Licensing)

Article 5. [1.] The rights to obtain a patent as provided in Article 3, or patent rights acquired on the basis thereof, hereinafter called jointly-held patent rights, may be licensed to a third party by the AIST director-general when one of the following conditions applies.

- (1) Party B, without good reason, fails to license said patent rights within two years after the technical assistance term has ended.
- (2) If after completing the term for technical assistance, it is thought to be in the public interest to license said joint patent rights to a third party.

2. If licensing is granted to a third party based on the preceding provision, the AIST director-general may grant said licensing on his/her own notwithstanding Article 73, Item 3 of the Patent Law.

(Royalties)

Article 6. [1.] When Party B licenses joint patent rights, the AIST director-general shall assess a royalty as stipulated in a separate licensing agreement. The royalty assessed in that case shall be an amount corresponding to the share owned by the AIST director-general in said rights.

2. The royalties for joint patent rights collected from a third party shall be returned to the AIST director-general and Party B proportionate to their share in said rights.

(Patent Fees)

Article 7. [1.] Party B must assume all costs including filing fees and patent fees connected with joint patent rights.

2. If Party B does not assume responsibility for the filing fees and patent fees as stipulated in the preceding clause, Party B must submit a "deed of transfer" to Party A that relinquishes his/her share in said rights to Party A.

(Applicability)

Article 8. The provisions from Article 1 to the preceding article, apply to design rights and design registration rights, as well as utility model rights and utility model registration rights.

(Consultation)

Article 9. In addition to the above provisions, Party A and Party B shall hold periodic consultations to discuss necessary matters related to the administration of technical assistance-related findings.

6. Rules Governing AIST Testing, Analysis, and Use of Equipment

[15 October 1949, MITI Ordinance No. 54]

Revised: 1 August 1952, MITI Ordinance No. 59;
20 March 1954, MITI Ordinance No. 6

Testing, analysis, etc. conducted by AIST research laboratories comes under the AIST Establishment Act Execution Order (1948 Cabinet Order No. 207). The following provisions have been set forth regarding the testing, analysis, and use of AIST equipment.

Rules Governing AIST Testing, Analysis, and Use of AIST Equipment (revised: 1954 MITI Ordinance No. 54)

Article 1. [1.] A party requesting testing (excludes type approval tests, but includes supplemental type approval tests), analysis, or consulting from an AIST research laboratory must prepare a written request with a list of actuals using Form 1 and submit it to the director of the AIST research laboratory, hereinafter called the AIST research laboratory director.

2. A separate written request as above must be submitted for each research item.

3. If necessary, the AIST research laboratory director may specify quantity of actuals in Article 1.

Article 2. When testing (excludes type approval tests), analysis or consulting has ended, the AIST research laboratory director shall issue a performance report using Form 2 to the party making the request.

Article 3. A party requesting a research laboratory to conduct a type approval tests must submit written descriptions and drawings of the actuals, as well as a history of the factory, to the AIST research laboratory director along with a written request using Form 1. In the case of supplemental type approval tests, however, the party may omit written descriptions, drawings, and factory history, and changes in the original model.

Article 4. [1.] If type approval test results conform to stated standards, the AIST research laboratory director shall issue a certificate to that fact to the party making the request using Form 3.

2. Parties requiring duplicate copies of the performance report in Article 2 or the above certificate must submit a request using Form 4 to the AIST research laboratory director. The written request in Article 1, Item 1, and previous requests may be combined into a single request.

3. A certification mark and certification number shall be displayed on the actuals of the type being certified in Item 1.

4. The AIST research laboratory director shall cancel the certification if the product based on the type receiving certification in Item 1 does not conform to that type.

Article 5. A party requiring changes be made to items contained in the preceding certification shall submit a request to the AIST research laboratory director using Form 5.

Article 6. If individual test results on a product conform to stated standards based on the type receiving certification in Article 4, the AIST research laboratory director shall, at the request of the party, affix a sticker to that effect, and attach a seal to actuals in a place where it can easily be affixed.

Article 7. A party wanting a research laboratory to do testing, regulating, or processing must submit a written request to the AIST research laboratory director using Form 6 listing the materials and apparatus required.

Article 8. [1.] A party wanting a research laboratory to do testing (includes type approval tests), analyzing, consulting, trial manufacturing, regulating, or processing, hereinafter called testing and analysis, etc., or a party submitting an application based on Article 4, Item 2, or Article 5, hereinafter called the requesting party, must receive the approval of the AIST director-general and pay a fee set by the director.

2. The AIST research laboratory director must make the above fee easy to understand.

3. When the requesting party asks that the testing or analysis, etc. be done on a priority basis, or be completed within a limited time frame, that request must be clearly stated on the written request, and a fee must be paid that is, respectively, two and three times greater than the amount called for in Item 1.

4. The requesting party may not file a complaint in the event testing and analysis is delayed.

5. The fees mentioned in Item 1 and the preceding item shall not be repaid under any circumstances.

(1952 MITI Ordinance No. 59 — Partial Revision)

Article 9. The AIST research laboratory director may deny the request if testing and analysis, etc. is thought to be unnecessary or cannot be done.

Article 10. [1.] Actuals, materials, and apparatus will not be returned except under the following cases.

(1) The requesting party asks for their return by written request, and the AIST research laboratory director deems it appropriate.

(2) Request for testing and analysis, etc. is denied.

2. The costs incurred in returning actuals, materials, and apparatus must be born by the requesting party.

3. The AIST research laboratory director is absolved of any liability regarding the loss or damage to actuals, materials, or apparatus as a result of testing, analysis, etc..

Article 11. [1.] A party using any of the equipment in the research laboratory, hereinafter called the user, must submit an application using Form 7 to the director. Those using automobile test roads, however, must submit an application modeled after Form 7-2 to the director.

2. If the above application is approved, the AIST research laboratory director shall issue a permit modeled on Form 8 to the user.

3. The user, upon receiving approval from the AIST director-general, must pay a user fee set by the director.

Article 12. [1.] Processing fees must be paid with revenue stamps and user fees must be paid in cash.

2. The above revenue stamps must be affixed to all written requests, claim forms, and applications.

3. The AIST research laboratory director may allow processing fees and user fees to be paid upon completion if hardship is determined beforehand.

Article 13. [1.] A party must submit an application modeled on Form 9 to the AIST research laboratory director when selling, transferring, or obtaining loans for products, ingredients, materials, prototypes, or design plans that were manufactured, conditioned, or processed by and for the research laboratory.

2. If the above application is approved, the AIST research laboratory director shall issue a permit to the user using Form 10.

3. The above applicant, upon receiving approval from the AIST director-general, must pay a user fee set by the director.

(Addendum)

1. This ministerial ordinance takes effect from the day of promulgation.

2. The following regulations are hereby abolished:

Regulations Governing Analysis, Testing, and Consulting by Industrial Research Laboratories (1918 Agriculture and Commerce Ministry Ordinance No. 28)

Regulations Governing Product Distribution and Commissioned Manufacture by Ceramics Research Laboratories (1928 Ministry of Commerce and Industry Ordinance No. 5)

Regulations Governing Testing, Analysis, and Consulting by Textile Industrial Research Laboratories (1937 Ministry of Commerce and Industry Ordinance No. 14)

Regulations Governing Product Distribution and Commissioned Manufacture and Processing by Textile Industrial Research Laboratories (1937 Ministry of Commerce and Industry Ordinance No. 15)

Regulations Governing Industrial Arts Institute Products and Design Delivery, and Commissioned Product Manufacture and Design Execution (1930 Ministry of Commerce and Industry Ordinance No. 3)

Regulations Governing Testing, Analysis, and Consulting by Fuel Research Institutes (1938 Ministry of Commerce and Industry Ordinance No. 87)

Regulations Governing Testing of Electrical Products (1916 Ministry of Communication Ordinance No. 50)

3. The selling, transferring, or obtaining of loans for products, ingredients, materials, prototypes, or designs that are manufactured, executed, and/or processed by and for the research laboratories that had formerly been based on the foregoing ministerial ordinances is hereby considered to be testing and analysis, and selling, transferring, and lending under these regulations.

Supplement (1 August 1952 MITI Ordinance No. 59)

This ministerial ordinance takes effect from the day of promulgation.

Supplement (20 March 1954 MITI Ordinance No. 6)

This ministerial ordinance takes effect from the day of promulgation.

7. Regulations Governing Lending of AIST Machinery and Tools for Experimental Research

[18 July 1952, MITI Ordinance No. 49]

Revised: 8 August 1952, MITI Ordinance No. 59;
7 April 1981, MITI Ordinance No. 20

The following Regulations Governing Lending of AIST Machinery and Tools for Experimental Research is covered under Article 5 of the law pertaining to non-compensatory lending and transfer of goods (1947 Law No. 229).

Rules Governing Lending of Machinery and Tools for Experimental Research

(Purpose)

Article 1. This ministerial ordinance governs the non-compensatory lending and less-than-fair-market value lending of machinery, apparatus, and tools that belong to the Agency of Industrial Science and Technology (AIST).

(Lending Range)

Article 2. The director-general of AIST, or a director of an AIST research laboratories, hereinafter called AIST research laboratory director, may loan machinery and tools for the purpose of testing, research, or inspection, hereinafter called experimental research, at no charge, or at less-than-fair-market value to the following entities.

- (1) Parties conducting joint experimental research with an AIST research laboratory
- (2) Parties that have been commissioned by an AIST director to do experimental research
- (3) Local public institutions, or corporations that were founded by special laws, or under Article 24 of the Civil Code (1954 Law No. 19).

Article 3. An AIST research laboratory director may loan machinery and/or for conducting experimental research at less-than-fair-market value to the following parties.

- (1) Parties conducting experimental research which is being subsidized in accordance with Article 3 (experimental research grants) of the Corporate Rationalization and Promotion Law (1952 Law No. 5).
- (2) Parties that have been granted permission to license patent rights belonging to the government from an AIST research laboratory director and are conducting experimental research necessary for its implementation.

(Loan Period)

Article 4. [1.] The AIST research laboratory director sets the term for lending machinery and/or tools, hereinafter called the loan period, at one year or less.

2. If there are compelling circumstances, the AIST research laboratory director may extend the preceding loan period at the request of the borrower.

(Loan Fee)

Article 5. [1.] The fee for lending machinery and/or tools, hereinafter called the loan fee, is determined by the AIST director-general or by an AIST research laboratory director with the approval of the AIST director-general.

2. The loan fee must be prepaid every six months according to payment notices issued by revenue officials.

3. In the event the loan fee is revised, the AIST research laboratory director shall adjust for differences between the loan fees already paid and the post-revision loan fee in the next payment term.

(Lending Fee Exemptions)

Article 6. In the event that the borrower is unable to make use of the machinery and/or tools for experimental research due to circumstances beyond their control, the AIST director, if he/she such case to have been unavoidable, may, at the request of the borrower, forgive the loan fee incurred during the period in which the machinery and/or tools could not be used for experimental research.

(Loan Fee Repayment Claims)

Article 7. With the exception of the preceding clause, the borrower may not submit a claim for repayment.

(Loan Application)

Article 8. [1.] A party wanting to borrow machinery and/or tools must submit an application in duplicate modeled on Form 1 to the AIST research laboratory director responsible for said tools and/or equipment.

2. When the borrower wants to apply for an extension to the loan period as provided in Article 4, Item 2, he/she must submit an application in duplicate modeled after Form 2 to the AIST research laboratory director one month prior to the expiration date of the loan period.

3. When a borrower wants to be exempted from paying the loan fee as provided in Article 6, he/she must submit an application in duplicate modeled after Form 3 and attach a letter verifying the reasons why an exemption is necessary immediately after the situation that led to the tools and/or equipment not being used no longer exists.

(Notification of Loan Approval)

Article 9. [1.] When an application pertaining to the preceding articles and clauses is accepted, the AIST research laboratory director shall notify the applicant of its approval or denial.

2. The AIST research laboratory director must receive prior approval from the AIST director-general when he/she notifies the applicant of the approval mentioned in the preceding clause.

3. When deemed necessary in the case of Item 1, the AIST research laboratory director may attach conditions to the approval.

(Delivery of Machinery and Tools)

Article 10. [1.] The delivery of machinery and/or tools that have been borrowed in accordance with Article 2 and Article 3 shall be made at a time and place designated by the AIST research laboratory director.

2. The party that has received delivery of machinery and/or tools must submit a receipt in duplicate modeled after Form 4 to the AIST director.

(Returning Machinery and Tools)

Article 11. [1.] Machinery and/or tools shall be returned at the time and place designated by the AIST director.

2. In the event the time designated by the AIST research laboratory director comes after the expiration of the loan period, no loan fee shall be assessed for the period starting from the day after completing the loan term to the day designated by the AIST director.

(Costs)

Article 12. The costs incurred in delivering and returning machinery and/or tools shall be the responsibility of the borrower.

(Reports)

Article 13. If deemed necessary, the AIST research laboratory director may ask for a report from the borrower. He may also regulate entry into the area where the borrowed machinery and/or tools are being used.

Article 14. [1.] If the machinery and/or tools being loaned are lost or damaged, the borrower must submit a report in duplicate to the AIST research laboratory director modeled on Form 5 regarding such loss or damage, and wait for further instructions.

2. Before issuing any instructions regarding the preceding clause, the AIST research laboratory director must get the approval of the AIST director-general.

(Borrower Liability)

Article 15. If the loss or damage stated in Item 1 of the preceding article is deemed to have been the fault of the borrower, the AIST research laboratory director may ask the borrower to pay compensation for repairing the lost or damaged equipment, or he/she may ask the borrower to make reparations for the damages in cash.

(Breach-of-Contract Penalty)

Article 16. If the borrower does not return the borrowed machinery and/or tools by the day specified in Article 11, Item 1, or Article 18, the borrower must pay a breach-of-contract penalty that is calculated at twice the normal lending fee for that period starting from the day after said day the machinery and/or tools were supposed to be returned. However, this penalty may be waived with approval from the AIST director-general if the AIST director-general has determined that there were compelling circumstances for not returning the machinery and/or tools, or the AIST research laboratory director determines that there were compelling circumstances for not returning the machinery and/or tools.

(Reparations)

Article 17. The reparations mentioned in Article 15 and the breach-of-contract penalty mentioned in the preceding article must be paid according to payment notices issued by revenue officials.

(Contract Violations)

Article 18. If any of the following situations apply to the borrower, the AIST research laboratory director may cancel the lending agreement and order the return of the borrowed tools and/or equipment at a designated time and place.

- (1) The borrowed machinery and/or tools were used for purposes other than experimental research.
- (2) The borrowed machinery and/or tools were subleased to another party.
- (3) The borrowed machinery and/or tools were not put under the supervision of a qualified person.
- (4) The provisions in Article 9, Item 3 were violated.
- (5) There was a violation of any regulation in this ministerial ordinance, or a violation of an AIST research laboratory director order or directive.

Supplement

This ministerial ordinance is valid from the day of promulgation and has been applicable since 1 July 1952.

Supplement (1 August 1952 MITI Order No. 59)

This ministerial order is valid from the day of promulgation.

Supplement (7 April 1981 MITI Ordinance 20)

This ministerial order is valid from the day of promulgation.

Ties to Public Examination, Technology Centers (Kohsetsuhi)

93FEO225I Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 525-538

From the standpoint of improving industry on a nationwide basis, it is important that testing, research, and technical assistance be conducted on a nationwide basis. In that context, it is essential that experimental research and technical assistance be promoted by establishing closer ties between the research laboratories affiliated with AIST and the more than 700 public examination and technology centers in the mining and manufacturing industry which employ approximately 7,000 people.

AIST has, therefore, organized various industrial science and technology liaison committees in order to create stronger ties with those public examination and technology centers. It has also gone one step further by inviting employees from those public examination and technology centers to AIST research laboratories for training.

1. Industrial Science and Technology Liaison Committees

Industrial science and technology liaison committees were established in 1954 as liaison organizations that acted as an intermediary between various regional public examination and technology centers involved in mining and manufacturing and national research institutes and public examination and technology centers.

The work of the committee is focused on improving experimental research and technical assistance programs to correct the technological gap that exists between regions primarily in small and medium enterprises, and to resolve the technical problems for disseminating new technologies to regional industries. To achieve that goal, the committees began offering experimental research exchange programs, technical training, and joint R&D with national and public organizations. In addition, they are also working with public examination and technology centers in modernizing equipment and training personnel working in small and medium enterprises.

As can be seen in the organizational chart shown in the following section, the committees include eight joint subcommittees and eight regional committees.

**Regulations Governing Industrial Science and Technology Liaison Committee
Administration**

1983 AIST Directive No. 5281, 11 October 1983

(Partially amended- 1 April 1987)
(Partially amended- 1 July 1987)

**The Regulations Governing Industrial Science and Technology Liaison Committee
Administration are set forth as follows:**

(Purpose)

Article 1. The purpose of the Industrial Science and Technology Liaison Committee is to create a deeper relation between regional public examination and technology centers; promote greater cooperation between national research institutes and regional public examination and technology centers, raise the overall capabilities of these institutions to the highest levels possible, promote greater interaction between institutions by experimental research, and improve science and technology.

(Organization)

Article 2. The Industrial Science and Technology Liaison Committee consists of a general committee, various joint subcommittees representing different technologies, various regional industrial science and technology liaison committees, and a steering committee.

(Chairman)

Article 3. [1.] The chairman of the Industrial Science and Technology Liaison Committee shall be the director-general of AIST.

2. In the event of unforeseen circumstances, a committee member shall be pre-designated as a proxy to the chairman.

(Committee Members)

Article 4. Committee members shall come from related national research institutes, related public examination and technology centers, related government bureaus and agencies, and related regional public organizations.

(General Committee)

Article 5. [1.] The general committee is convened once a year by the chairman of the Industrial Science and Technology Liaison Committee. The chairman of the Industrial Science and Technology Liaison Committee may, if the need arises, convene the committee on short notice.

2. The chairman of the general committee is decided on by mutual vote of those in attendance.

3. The chairman of the general committee presides over the proceedings of the general meeting.

4. The following issues shall be discussed at general meetings.

- (1) Mutual cooperation and greater technical assistance in experimental research
- (2) Issues proposed by joint subcommittees and regional industrial science and technology liaison committees
- (3) Other issues deemed necessary for improving industrial science and technology

5. The chairman of the general committee will be the deciding vote when an issue in the general meeting is deadlocked where more than half the members are in attendance.

(Joint Subcommittees)

Article 6. [1.] The Industrial Science and Technology Liaison Committee consists of the following joint subcommittees. These subcommittees hold discussions on research issues pertaining to their respective industrial technology fields.

- (1) Machinery and Metals Joint Subcommittee
- (2) Chemicals Joint Subcommittee
- (3) Textiles Joint Subcommittee
- (4) Manufacturing Science Joint Subcommittee
- (5) Ceramics Joint Subcommittee
- (6) Industrial Pollution Joint Subcommittee
- (7) Biotechnology Joint Subcommittee
- (8) Electronics Joint Subcommittee

2. The chairman of the joint subcommittees is named by the chairman of the Industrial Science and Technology Liaison Committee from among the heads of related national research institutes.

3. The joint subcommittees generally meet once a year and are called by the chairmen of the joint subcommittees.

4. A joint subcommittee chairman presides over the joint subcommittee.

5. The following issues shall be deliberated on at joint subcommittee meetings.

- (1) Coordination of experimental joint research and strengthening mutual cooperation and technical assistance
- (2) Issues concerning respective technologies and shared technical problems
- (3) Issues proposed by regional subcommittees, sectional committees, and expert committees
- (4) Other issues necessary for improving industrial science and technology

6. The chairman of the joint subcommittee will be the deciding vote when an issue in the joint subcommittee meeting is deadlocked where more than half the members are in attendance.

7. A joint subcommittee may set up regional subcommittees, sectional committees, and expert subcommittees.

8. The selection of the chairman of a regional subcommittee, sectional committee, or expert subcommittee is done by mutual vote of the committee members.

9. Regional subcommittees study the following issues:

- (1) Technical assistance, and research necessary to improve regional industrial technology fields
- (2) Exchange of technology and research information
- (3) Other issues necessary for improving industrial science and technology

10. Sectional committees study the following issues:

- (1) The coordination, cooperation, and technical assistance required for experimental research in specialized areas
- (2) Issues concerning shared technical problems being faced in specialized areas

11. Expert subcommittees study practical issues of the joint subcommittee.

(Regional Industrial Science and Technology Liaison Committees)

Article 7. [1.] The purpose of regional industrial science and technology liaison committees, hereinafter called regional committees, is to discuss technical issues and try to improve the technologies which are unique to each region of the country.

2. The regional committees are more or less divided according to the administrative divisions of MITI bureaus.

3. The chairman of the regional committee is generally the director of a local MITI bureau.

4. The regional committee is generally convened twice a year by the chairman of the regional committee.

5. The chairman of the regional committee presides over the proceedings of the regional committee meeting.

4. The following issues are deliberated on at regional committee meetings:

- (1) Technical assistance to regional industries
- (2) Improving industrial science and technology fields that are unique to small and medium companies in the region

- (3) Exchange of technology and research information
- (4) Joint activities between regional committees
- (5) Other necessary issues for improving technologies unique to that area

7. The chairman of the regional committee makes up the deciding vote when an issue in the regional committee meeting is deadlocked when more than half the members are in attendance.

(Steering Committee)

Article 8. [1.] The purpose of the steering committee is to facilitate the work of the industrial science and technology liaison committees, so it focuses on the following issues:

- (1) Administration of general committee meetings and implementation of resolutions
- (2) Liaison committee coordination regarding shared joint subcommittee technical problems
- (3) Other issues of importance facing the industrial science and technology liaison committees

2. The steering committee consists of the AIST director-general, the AIST deputy director-general, the division manager of the Technology Assistance Division in the Small and Medium Enterprise Agency, the chairmen of joint subcommittees, representatives of regional public examination and technology centers, and the staff of related bureaus and agencies and related groups.

3. The steering committee is generally convened twice a year by the AIST director-general. The AIST director-general may, if deemed necessary, call the committee together on short notice.

4. The chairman of the steering committee is decided on by mutual vote of those in attendance.

5. The chairman of the steering committee presides over the proceedings of the steering committee meeting.

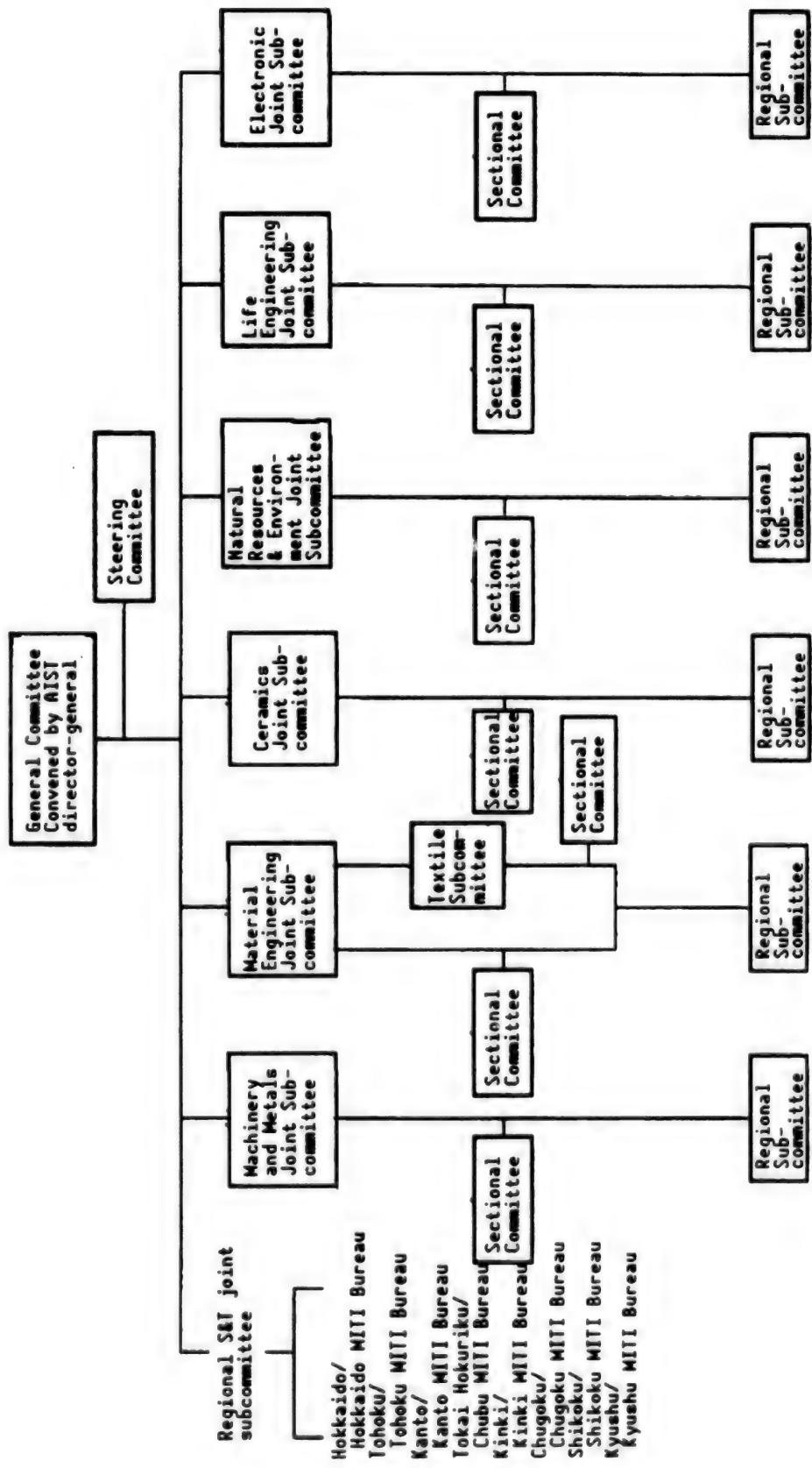
6. The executive offices of the steering committee are located in the Research Administration Division of AIST.

Supplement

These regulations have been in effect since 1 July 1988.

Chart of Industrial Science and Technology Liaison Committees

April 1992



Management and establishment of sectional committees and regional subcommittees are decided on by each joint subcommittee.

3. Technical Training Programs

Small and medium business schools within small and medium business associations have been conducting various training programs in order to provide the kind of knowledge and skills that those in charge of small and medium companies affiliated with national and local public organizations will need in order to provide effective technical assistance.

Part of this training is being conducted by AIST. AIST affiliated research laboratories have been providing technical training programs for technical experts employed at public examination and technology centers.

In the following table, we list the technical training programs being offered in 1992 at AIST research laboratories.

1992 Small and Medium Enterprise Six-Month Training Programs

| Training Organization | Training Subjects |
|--|--|
| National Research Laboratory of Metrology | Three-dimension evaluation of roughness in machined surfaces |
| Mechanical Engineering Laboratory | Advanced material engineering Micromachining technology Human vision and mechatronics Intelligent sensing technology in machining Development of new intermetallic compounds by mechanical alloying |
| National Chemical Laboratory for Industry | Lipid chemistry |
| Government Industrial Research Institute, Osaka | Ion mixing in fabricating C-BN film |
| Government Industrial Research Institute, Nagoya | Development of new products Ceramics manufacturing technology |
| Fermentation Research Institute | Basic technology for breeding microorganisms |
| Research Institute for Polymers and Textiles | Synthesizing functional materials by plasma surface treatment Controlling and evaluating functions in stimulus-response polymer materials Measuring thermal properties of clothing Research on handling of plastics |
| Electrotechnical Laboratory | Pattern recognition technology and mastering those types of RAD environments Neural networks and genetic algorithms |
| Industrial Products Research Institute | Analyzing biopolymer properties and their uses Learning about non-electrolytic nickel plating Configuration techniques of custom-made data bases |
| Research Institute for Environment and Natural Resources | Waste treatments |
| Government Industrial Research Laboratory, Shikoku | Using laser ion beams to improve quality of material surfaces |
| Government Industrial Research Laboratory, Tohoku | Corrosion theories and ways of measuring corrosion Using chelate resin to separate/concentrate microelements |

On Industrial Property Rights

93FE0225J Tokyo AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY in Japanese Oct 92 pp 541-554

Inventions, designs, and creations made by employees of AIST research laboratories are governed by regulations pertaining to work-related inventions. These regulations state that such patent rights shall become the property of the AIST director-general, and that those patent rights will be registered in Japan and in foreign countries. Patent rights will also be registered in Japan and in foreign countries for those patent rights obtained through commissioned research conducted through the National Research and Development Program. The following table shows the status of property rights obtained or pending as of 1992.

Many of the industrial patent rights that fall under AIST jurisdiction have already been put to use by private corporations. The licensing and paperwork involved in gaining approval to license patent rights are discussed elsewhere, but we can expect to see a great deal of activity in this area.

| | Foreign industrial property rights | | | | Domestic industrial property rights | | | | Total | | | |
|--|------------------------------------|-------------------|-------------------|-------------------|-------------------------------------|-------------------|------------|-------------------|-------------|-------------------|--------------|---------------|
| | Patents | | Under application | | Utility models | | Designs | | Trade-marks | | Total | |
| | Owned | Under application | Owned | Under application | Owned | Under application | Owned | Under application | Owned | Under application | Owned | Total |
| National Research Laboratory of Metallurgy | 10 | 4 | 14 | 55 | 98 | 3 | 12 | 0 | 0 | 0 | 58 | 110 |
| Mechanical Engineering Laboratory | 123 | 26 | 149 | 723 | 457 | 11 | 19 | 1 | 0 | 0 | 735 | 476 |
| National Chemical Laboratory | 189 | 180 | 369 | 802 | 664 | 9 | 11 | 0 | 0 | 0 | 811 | 675 |
| National Laboratory for Industry | | | | | | | | | | | 1,000 | 855 |
| GIRI, Osaka | 130 | 44 | 174 | 512 | 318 | 4 | 9 | 0 | 0 | 0 | 516 | 327 |
| GIRI, Nagoya | 71 | 45 | 116 | 334 | 311 | 1 | 4 | 0 | 0 | 0 | 335 | 315 |
| Fermentation Research Institute | 88 | 66 | 154 | 293 | 157 | 2 | 0 | 0 | 0 | 0 | 295 | 157 |
| Research Institute for Polymers and Textiles | 118 | 62 | 180 | 538 | 405 | 7 | 3 | 1 | 0 | 0 | 546 | 408 |
| Geological Survey of Japan | 3 | 0 | 3 | 8 | 12 | 2 | 5 | 0 | 0 | 0 | 10 | 17 |
| Electrotechnical Lab | 197 | 162 | 359 | 733 | 1,008 | 11 | 41 | 1 | 0 | 0 | 745 | 1,049 |
| Industrial Products Research Institute | 22 | 50 | 72 | 203 | 225 | 11 | 5 | 7 | 3 | 0 | 221 | 233 |
| Research Institute for Environmental Res. | 40 | 35 | 75 | 225 | 222 | 19 | 24 | 0 | 0 | 0 | 244 | 246 |
| GIOI, Hokkaido | 31 | 4 | 35 | 96 | 117 | 4 | 10 | 0 | 0 | 0 | 100 | 127 |
| GIRI, Kyushu | 92 | 59 | 151 | 247 | 156 | 3 | 2 | 0 | 0 | 0 | 250 | 158 |
| GIRI, Shikoku | 17 | 20 | 37 | 102 | 122 | 12 | 4 | 0 | 0 | 0 | 114 | 126 |
| GIRI, Tohoku | 6 | 1 | 7 | 72 | 94 | 2 | 0 | 0 | 0 | 0 | 74 | 94 |
| GIRI, Chugoku | 3 | 2 | 5 | 40 | 31 | 2 | 5 | 0 | 0 | 0 | 42 | 36 |
| Subtotal | 1,140 | 760 | 1,900 | 4,983 | 4,397 | 103 | 154 | 10 | 3 | 0 | 5,096 | 4,554 |
| Large-scale project | 107 | 23 | 130 | 1,435 | 905 | 114 | 96 | 0 | 1 | 0 | 1,550 | 1,001 |
| Sunshine Project | 30 | 3 | 33 | 447 | 46 | 79 | 0 | 0 | 0 | 0 | 526 | 46 |
| Moonlight Project | 10 | 2 | 12 | 146 | 25 | 20 | 8 | 0 | 0 | 0 | 166 | 33 |
| Next-generation project | 134 | 86 | 220 | 456 | 835 | 12 | 4 | 0 | 0 | 0 | 468 | 839 |
| Medical and welfare equipment program | 35 | 16 | 51 | 303 | 505 | 91 | 36 | 26 | 1 | 0 | 420 | 542 |
| Total | 1,456 | 890 | 2,346 | 7,770 | 6,713 | 419 | 298 | 36 | 4 | 1 | 8,226 | 7,015 |
| | | | | | | | | | | | | 9,682 |
| | | | | | | | | | | | | 7,905 |
| | | | | | | | | | | | | 17,587 |

1. Ways To Use Industrial Property Rights

AIST Industrial property rights and their implementation are discussed in separate sections. For those wanting to license industrial property rights, this section will describe the application process for obtaining licensing approval, concluding a licensing agreement, things to be aware of during the licensing period, and other pertinent matters.

1-1 Application Process for Licensing Approval

In terms of industrial property rights owned by AIST, exclusive licensing rights have been given to the Japan Industrial Technology Association, hereinafter called JITA, in accordance with AIST Exclusive Rights Establishment Guidelines, so those wanting to license a patent should submit a license application in triplicate to JITA using the format described below.

The license application submitted by the party desiring the license will be studied from various perspectives including the reasons stated, history, and implementation plans. Licensing approval will generally be given to all qualified parties wanting a license after having followed the set procedures.

Party Desiring License

↓
↓
↓
↓

1. Inquiry, consultation
2. Prepare license application and related forms

Japan Industrial Technology Association

↓
↓
↓
↓
↓
↓
↓
↓

1. Study submitted documents; investigate required items and consult with license applicant
2. Prepare basic explanatory statement (proposal) on licensing fee, a licensing agreement (proposal), and a company recommendation

Research Laboratory

↓
↓
↓
↓

1. Study done in laboratory
Decision made on accepting or denying licensing permission

Japan Industrial Technology Association

↓
↓
↓
↓
↓

1. Answer received, party desiring license notified (preparation instructions given for licensing agreement)

Party Desiring License

1-2 Licensing Agreements

After licensing approval has been granted, a licensing agreement is concluded between JITA, hereinafter referred to as Party A, and the licensing party, hereinafter referred to as Party B.

The specifics of licensing agreements are prescribed by Special General Law No. 88 which was established on February 9, 1972 by the Government Patent Management Council for regulating Patent Office director-general notifications and government patent rights licensing agreements.

(1) Licensing of Patents Pending

Licensing Agreement for Government Patents Pending (Sample)

The Japan Industrial Technology Association, hereinafter referred to as Party A, having been granted monopolistic licensing rights (exclusive licensing rights after registration) from the director-general of the Agency of Industrial Science and Technology under the Ministry of International Trade and Industry, hereinafter called AIST director-general, for the invention pertaining to the patent being applied for in Article 1, hereby enters into the following agreement with (company name), hereinafter referred to as Party B, to license said invention for which a patent is pending.

(License Approval)

Article 1. Party A hereby grants Party B permission to license the following invention, hereinafter called "the invention."

(License Range)

Article 2. The limitations placed on the license in the preceding article are as follows.

Term: Five years from (Month), (Day), (Year)
Specifics: Manufacture, sale, and use

(Registration)

Article 3. After patents rights on "the invention" have been registered and Party A has completed set procedures to obtain exclusive licensing, Party B may follow set procedures to obtain an ordinary license pertaining to said patent rights at its own expense.

(Licensing Approval to Third Party)

Article 4. Party A may also license "the invention" to a party other than Party B, hereinafter called the third party.

(Furnishing Technical Information)

Article 5. When Party B desires the technical information required to license "this invention", Party A shall provide such information in writing, or by technical assistance provided by the AIST director-general.

(Related Inventions)

Article 6. [1.] When an employee belonging to Party B makes an invention on his/her own pertaining to "the invention" and decides to file for a patent on said invention, Party B must obtain the prior consent of the AIST director-general through Party A, and promptly provide Party A with a rough outline of that invention.

2. If an employee belonging to Party B and an employee belonging to AIST make an invention jointly pertaining to "the invention" and decides to apply for a patent on said invention, Party B shall file for the patent jointly with the AIST director-general.

3. The administrative work involved in licensing the preceding invention shall be done by Party A and Party B in consultation with the AIST director-general.

4. Party B must comply with any memorandums, written confirmations, or written agreements that are exchanged with Party A and/or the AIST director-general concerning the treatment of said invention related to "the invention" notwithstanding the provision in Item 2.

5. The provision in Item 4 applies to treatment of conceptual ideas that are covered by the Utility Model Law and creations covered by the Design law.

(Royalties)

Article 7. [1.] After submitting the reports stipulated in Article 8, Item 1, Party B must pay Party A a royalty calculated according to the following formula for each government fiscal period during the agreement term.

(Example)

[$\times\%$ of product sales (unit price \times quantity sold) obtained by licensing "this invention"]

2. The payment referred to in the preceding clause which Party B must make includes a royalty fee and a reasonable consumption tax added to the royalty fee, hereinafter together called royalties.

3. If Party B does not pay the preceding royalties by the due date stipulated by Party A, Party B must pay a penalty to Party A calculated at an 8.25% annual interest rate on all unpaid amounts for each day starting from the day after the due date until the date payment is made.

4. If economic circumstances or other significant changes take place with either party, Party A and/or Party B shall hold talks with each other about changing the royalties referred to in Item 1 at the request of Party A or Party B.

5. If a settlement cannot be reached in the preceding talks, either Party A or Party B may request the agreement be annulled.

6. In the event that a denial decision was made concerning the patent application pertaining to the invention, or the patent application was forfeited, or patent application was declared invalid, Party B is not absolved from paying the royalties stipulated in Item 1 up to such time that the patent application was denied, forfeited, or declared invalid.

7. Party A shall not return licensing fees already paid regardless of reason.

(Reports)

Article 8. [1.] Party B must make out a quarterly report for each government fiscal quarter indicating production amounts, sales amounts, sales totals, or any other items stipulated by Party A pertaining to licensing of "the invention", and submit that report to Party A within 15 days after said quarter has ended.

2. If it is deemed necessary by Party A for achieving a better understanding of the implementation status of the invention, he/she may request more detailed reports from Party B regarding implementation or other related issues, or it may send its own staff members, or staff members designated by the AIST director-general, to the work site of Party B to examine accounting ledgers or other such materials.

(License Transfers)

Article 9. [1.] Party B must notify Party A immediately in the event that the license referred to in Article 1 is transferred due to inheritance, merger, or any other such change in status. This also includes license transfers that result from business transactions.

2. In addition to that which is set forth in the preceding clause, Party B must obtain prior consent from Party A when an action it plans to take will result in the transfer of the license pertaining to "the invention" referred to in Article 1.

(Patent Display)

Article 10. Party B must make an effort to display the products, product containers, and/or packaging that result from licensing "the invention" in product-related catalogues.

(Safeguarding Rights)

Article 11. [1.] Party A shall make sure the agreement with the AIST director-general clearly states that the AIST director-general will fairly execute the patent application procedures pertaining to "this invention."

2. Party A shall promptly notify Party B when it has been notified by the AIST director-general that the patent limitations requested in the patent application for "this invention" have been reduced or otherwise changed.

3. In the event that Party A receives notification from the AIST director-general to the effect that a denial decision has been made concerning a patent application pertaining to "the invention", said Party A shall notify Party B to that effect and obtain the prior consent of B.

4. Party A shall notify Party B when it has been informed by the AIST director-general that the patent rights pertaining to "this invention" have been registered.

5. Party A must notify Party B when it has been informed by the AIST director-general that a patent application based on "this invention" has been declared invalid after they have been registered.

6. Party A shall notify Party B and get his/her prior consent when it has been informed by the AIST director-general that detailed descriptions and corrected drawings are wanted for a review of patent rights pertaining to "this invention" after they have been registered.

(Infringement)

Article 12. If said patent rights are violated after the patent application pertaining to "the invention" has been publicly disclosed, Party A, at the request of Party B, shall notify the AIST director-general immediately so that he/she may adopt measures to eliminate that problem.

(Third Party Infringement)

Article 13. If Party B infringes upon the rights of a third party by licensing "the invention", Party A and the AIST director-general shall be absolved of all liability regarding that infringement.

(Maintaining Secrecy)

Article 14. [1.] During and after the term of this agreement, Party B shall maintain secrecy and not divulge any technical information granted by Party A or the AIST director-general. This does not include information which is considered public knowledge.

2. The technical information obtained from Party B by audits or through knowledge gained from improvements to the invention (excludes items which are not secret) shall be considered secret and may not be divulged by Party A or the AIST director-general to a third party.

(No Contest Restriction)

Article 15. Whether directly or indirectly, Party B is absolutely prohibited by Patent Law from objecting to patent applications and patent rights pertaining to "the invention", and also from contesting patent denial decisions, the rights of Party A, or applicants filing patents pertaining to "the invention."

(Agreement Annulment)

Article 16. [1.] If any of the items below are applicable, Party A may request the agreement be annulled by giving written notification to Party B. In that case, the final day of the contract will be one month after Party B has been notified of said annulment.

- (1) Party B is in violation of licensing details described in Article 2.
- (2) Party B does not pay the royalties stipulated in Article 7, Item 1 and 2, or Party B is noticeably late in paying said royalties.
- (3) Party B is substantially late in submitting the reports stipulated in Article 8, Item 1, or declines without good reason to undergo the auditing stipulated in Article 8, Item 2.
- (4) Party B fails to maintain secrecy as stipulated in Article 14, Item 1, or violates the "no contest" agreement stipulated in Article 15.
- (5) Party B provides false information or conducts other such unlawful behavior pertaining to the implementation of the agreement.
- (6) Party B fails to implement "the invention" without good reason, or demonstrates poor performance.

2. If any of the items below are applicable, Party B may request the agreement be annulled by giving written notification to Party A. In that event, the final day of the contract, if either (1) and (2) is applicable, will be one month after Party A has been notified of said annulment, and if either (3) through (6) is applicable, the final day will be the day in which Party A is notified of said annulment.

- (1) The AIST director-general does not judiciously execute the patent application procedures stipulated in Article 11, Item 1, or does not adopt measures to eliminate patent infringement violations stipulated in Article 12, or Party A and the AIST director-general fail to maintain secrecy as called for in Article 14, Item 2.
- (2) Economic circumstances or other noticeable changes take place after the agreement goes into effect thereby eliminating any hope of earning a profit by licensing "this invention" despite reasonable efforts.
- (3) The patent range requested has been reduced, or other such significant change has occurred in connection with the patent application pertaining to "the invention."
- (4) Patent application pertaining to "the invention" has been forfeited.
- (5) Patent application pertaining to "the invention" has been rejected.
- (6) Patent application pertaining to "the invention" has been declared invalid.

3. In addition to that which is covered by Item 2 in the preceding clause, Party A or Party B may allow a period of more than 15 days for fulfilling contractual obligations in the event that said contractual obligations stipulated in said agreement are not fulfilled by either Party A or Party B. If the contractual obligations are not fulfilled by Party A or Party B within said time period, Party A or Party B may request the agreement be annulled. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

4. If either Party A or Party B is aware that something is untrue or patently false in concluding said agreement, Party A or Party B may request that the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

5. If the provision in Article 7, Item 5 is applicable, Party A or Party B may request the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract will be the day upon which Party A or Party B is notified of the request to cancel the agreement.

6. In the event that one of the items from 1 to 4 is applicable, either Party A or Party B may request reparations if it is determined that either Party A or Party B has acted deliberately or negligently.

(Post-Agreement Obligations)

Article 17. [1.] In the event the contractual period stated in Article 2 has expired, or the agreement has been terminated for one of the preceding reasons, Party B must pay royalties to Party A corresponding to lost royalties on production amounts related to the licensing of "this invention." The method of payment shall be determined separately.

2. In the case noted in the preceding section, Party A and Party B shall have the rights and bear the obligations set forth in Article 7 and Article 8 within a range necessary to the enforcement of these royalty payment liabilities.

(Extending the Agreement Period)

Article 18. When Party B wants to extend the agreement term, it shall submit a written request to that effect to Party A six months prior to the end of said agreement.

(Matters Not Provided For)

Article 19. Matters not provided for in this contract shall be determined by consultation between Party A and Party B.

(Appendix)

Article 20. [1.] The details of this agreement are listed in the appendix.

2. If economic circumstances or other significant changes arise, Party A and Party B shall hold mutual talks at the request of either party with regard to changes to the appendix.

3. If the preceding talks are not held, the former appendix shall continue to be used.

Licensing Agreement for Government Patents Pending Appendix (Sample)

1. The "manufacture, sale, and use" referred to in Article 2 of the Government Patent Pending Licensing Agreement, hereinafter called the agreement, means "manufacture, sale, and use" in Japan, and if Party B intends "manufacture, sale, and use" in a country other than Japan, it shall give prior notification to Party A, and do so under instruction from Party A.

2. The unit price in Article 7 of this agreement refers to the factory delivered price.

3. The reports mentioned in Article 8, Item 1 of this agreement shall be done on separate forms.

4. The "other changes" referred to in Article 9, Item 1 of the agreement include changes in address, company name, representatives, and location of licensed factory.

5. The "said displays of this invention" referred to in Article 10 of this agreement shall mean display of "patents pending" up through registration of patent rights pertaining to said invention, and after registration, it shall mean display of "patent number."

(2) Registered Patent Rights

Licensing Agreement for Government Patent Rights (Sample)

The Japan Industrial Technology Association, hereinafter referred to as Party A, having been granted exclusive licensing rights from the director-general of the Agency of Industrial Science and Technology under the Ministry of International Trade and Industry, hereinafter called AIST director-general, for the invention pertaining to the patent rights referred to in Article 1, hereby enters into the following agreement with (company name), hereinafter referred to as Party B, to license said patent rights.

(License Approval)

Article 1. Party A hereby grants Party B permission to license the following invention, hereinafter called "the patented invention."

(License Range)

Article 2. The limitations placed on the license in the preceding article are as follows.

Term: Five years from (Month), (Day), (Year)

Specifics: Manufacture, sale, and use

(Registration)

Article 3. After this agreement has been concluded and Party A has completed the set registration procedures to obtain exclusive licensing rights, Party B may follow set procedures to obtain an ordinary license pertaining to said patent rights at its own expense.

(Licensing Approval to Third Party)

Article 4. Party A may also license "the patented invention" to a party other than Party B, hereinafter called the third party.

(Furnishing Technical Information)

Article 5. When Party B desires the technical information required to license "this invention", Party A shall provide such information in writing or by providing technical assistance through the AIST director-general.

(Related Inventions)

Article 6. [1.] When an employee belonging to Party B makes an invention on his/her own pertaining to "the patented invention" and decides to file for a patent on said invention, Party B must obtain the prior consent of the AIST director-general through Party A, and promptly provide Party A with a rough outline of that invention.

2. If an employee belonging to Party B and an employee belonging to AIST make an invention jointly pertaining to "the patented invention" and want to apply for a patent on said invention, Party B shall file for the patent jointly with the AIST director-general.

3. The administrative work involved in licensing the invention referred to in the preceding clause shall be done by Party A and Party B in consultation with the AIST director-general.

4. Party B must comply with any memorandums, written confirmations, or written agreements that are exchanged with Party A and/or the AIST director-general concerning the administration of said invention pertaining to "the patented invention" notwithstanding the provision in Item 2.

5. The provision in Item 4 apply to administration of conceptual ideas covered by the Utility Model Law and creations covered by the Design law.

(Royalties)

Article 7. [1.] After submitting the reports referred to in Article 8, Item 1, Party B must pay to Party A a royalty fee calculated according to the following formula for each government fiscal period during the agreement term

(Example)

[$\times\%$ of product sales (unit price \times quantity sold) obtained by licensing "this invention"]

2. The payment referred to in the preceding clause that Party B must make combines a royalty fee and a reasonable consumption tax added to the royalty fee, hereinafter together referred to as royalties.

3. If Party B does not pay the preceding royalties by a due date stipulated by Party A, Party B must pay a penalty to Party A calculated at an 8.25% annual interest rate on all unpaid amounts for each day starting from the day after the due date until the date payment is made.

4. If economic circumstances or other serious changes occur with either party, Party A and/or Party B shall hold talks with each other about changing the royalties referred to in Item 1 at the request of Party A or Party B.

5. If a settlement cannot be reached in the preceding talks, either Party A or Party B may request the agreement be annulled.

6. In the event the patent rights pertaining to the invention are declared invalid, Party B is not absolved from paying the royalty stipulated in Item 1 up to such time that the patent rights were declared invalid.

7. Party A shall not return licensing fees already paid regardless of reason.

(Reports)

Article 8. [1.] Party B make out a quarterly report for each government fiscal quarter indicating production amounts, sales amounts, sales totals, or any other items stipulated by Party A pertaining to licensing of "the patented invention", and submit that report to Party A within 15 days after said quarter has been completed.

2. If it is deemed necessary by Party A for achieving a better understanding of the implementation status of the invention, he/she may request more detailed reports from Party B regarding implementation or other related issues, or it may send its own staff members, or staff members designated by the AIST director-general, to the work site of Party B to audit accounting ledgers or other such materials.

(License Transfers)

Article 9. [1.] Party B must notify Party A immediately in the event that the license referred to in Article 1 is transferred due to inheritance, merger, or if any other such change in status. This also includes license transfers resulting from business transactions.

2. In addition to that which is set forth in the preceding clause, Party B must obtain prior consent from Party A when an action it plans to take will result in the transfer of the license pertaining "the patented invention" referred to in Article 1.

(Patent Display)

Article 10. Party B must make an effort to display the products, product containers, and/or packaging that result from licensing "the patented invention" in product-related catalogues.

(Safeguarding Rights)

Article 11. [1.] Party A must notify Party B when it has been informed by the AIST director-general that the patent rights pertaining to "the patented invention" are in question as to their validity, or when those patent rights have been declared invalid.

2. Party A shall notify Party B and get his/her prior consent when it has been informed by the AIST director-general that detailed descriptions and corrected drawings are wanted for a review of patent rights pertaining to "this patented invention."

(Infringement)

Article 12. In the event patent rights pertaining to "the patented invention" are infringed, Party A, at the request of Party B, shall notify the AIST director-general immediately so that he/she may adopt measures to eliminate that problem.

(Third Party Infringement)

Article 13. If Party B infringes upon the rights of a third party by licensing "the invention", Party A and the AIST director-general shall be absolved of all liability regarding that infringement.

(Maintaining Secrecy)

Article 14. [1.] During and after the term of this agreement, Party B shall maintain secrecy and not divulge any technical information granted by Party A or the AIST director-general. This does not include information which is considered public knowledge.

2. The technical information obtained from Party B by audits or through knowledge gained from improvements to the invention (excludes items which are not secret) shall be considered secret and may not be divulged by Party A or the AIST director-general to a third party.

(No Contest Restrictions)

Article 15. Whether directly or indirectly, Party B is absolutely prohibited by Patent Law from contesting patent denial decisions requests concerning patent rights pertaining to "the patented invention", and also from contesting the rights of Party A or the AIST director-general pertaining to "the patented invention."

(Agreement Annulment)

Article 16. [1.] If any of the items below are applicable, Party A may request the agreement be annulled by giving written notification to Party B. In that case, the final day of the contract will be one month after Party B has been notified of said annulment.

- (1) Party B is in violation of licensing specifics described in Article 2.
- (2) Party B does not pay the royalties stipulated in Article 7, Item 1 and 2, or Party B is noticeably late in paying said royalties.
- (3) Party B is substantially late in submitting the reports stipulated in Article 8, Item 1, or declines without good reason to undergo the auditing stipulated in Article 8, Item 2.
- (4) Party B fails to maintain secrecy as stipulated in Article 14, Item 1, or violates the "no contest" agreement stipulated in Article 15.
- (5) Party B provides false information or conducts other such unlawful behavior pertaining to the implementation of the agreement.
- (6) Party B fails to implement "the patented invention" without good reason, or demonstrates poor performance.

2. If any of the items below are applicable, Party B may request the agreement be annulled by giving written notification to Party A. In that event, the final day of the contract, if either (1) and (2) is applicable, will be one month after Party A has been notified of said annulment, and if either (3) through (6) is applicable, the final day will be the day in which Party A is notified of said annulment.

- (1) The AIST director-general does not judiciously carry out the patent application procedures stipulated in Article 11, Item 1, or does not adopt measures to eliminate patent infringement violations stipulated in Article 12, or Party A and/or the AIST director-general fail to maintain secrecy as called for in Article 14, Item 2.
- (2) Economic circumstances or other significant changes take place after the agreement goes into effect thereby eliminating any hope of earning a profit by licensing "the patented invention" despite reasonable efforts.
- (3) Patent rights pertaining to "the patented invention" have been declared invalid.

3. In addition to that which is covered by Item 2 in the preceding clause, Party A or Party B may grant a period of more than 15 days for fulfilling contractual obligations in the event that said contractual obligations stipulated in said agreement are not fulfilled by either Party A or Party B. If the contractual obligations are not fulfilled by Party A or Party B within said time period, Party A or Party B may request the agreement be annulled. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

4. If either Party A or Party B is aware that something is untrue or patently false in concluding said agreement, Party A or Party B may request that the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

5. If the stipulation in Article 7, Item 5 is applicable, Party A or Party B may request the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract will be the day upon which Party A or Party B is notified of the request to cancel the agreement.

6. In the event that one of the items from 1 to 4 is applicable, either Party A or Party B may request reparations if it is determined that either Party A or Party B has acted deliberately or negligently.

(Post-Agreement Obligations)

Article 17. [1.] In the event the contractual period stated in Article 2 has expired, or the agreement has been terminated for one of the preceding reasons, Party B must pay royalties to Party A corresponding to lost royalties on production amounts pertaining to the licensing of "the patented invention." The method of payment shall be determined separately.

2. In the case noted in the preceding section, Party A and Party B shall have the rights and bear the obligations set forth in Article 7 and Article 8 within a range necessary to the enforcement of these royalty payment liabilities.

(Extending the Agreement Period)

Article 18. When Party B wants to extend the agreement term, it shall submit a written request to that effect to Party A six months prior to the end of said agreement.

(Matters Not Provided For)

Article 19. Matters not provided for in this contract shall be determined by consultation between Party A and Party B.

(Appendix)

Article 20. [1.] The details of the agreement are listed in the appendix.

2. If economic circumstances or other significant changes arise, Party A and Party B shall hold mutual talks at the request of either party with regard to changes in the appendix.

3. If the preceding talks are not held, the former appendix shall continue to be used.

Licensing Agreement for Government Patents Appendix (Sample)

1. The "manufacture, sales, and use" referred to in Article 2 of the Government-Owned Patent Rights Licensing Agreement, hereinafter called the agreement, means the "manufacture, sales, and use" in Japan, and if Party B plans "manufacture, sales, and use" in countries other than Japan, it shall give prior notification to Party A, and do so under instruction from Party A.

2. The unit price in Article 7 of this agreement refers to the factory delivered price.

3. The reports mentioned in Article 8, Item 1 of this agreement shall be done on separate forms.

4. The "other changes" referred to in Article 9, Item 1 of the agreement include changes in address, company name, representatives, and location of licensed factory.

5. The "said displays of this invention" referred to in Article 10 of this agreement shall mean display of the "patent number."

(3) Licensing of Joint Inventions

Licensing Agreement on Jointly Owned Inventions (Sample)

The Japan Industrial Technology Association, hereinafter referred to as Party A, having been granted monopolistic licensing rights (exclusive licensing rights after registration) from the director-general of the Agency of Industrial Science and Technology under the Ministry of International Trade and Industry, hereinafter called AIST director-general, for the invention pertaining to the patent being applied for in Article 1, hereby enters into the following agreement with (company name), hereinafter referred to as Party B, to license said invention for which a patent is pending.

(License Approval)

Article 1. Party A hereby grants Party B permission to license the following invention, hereinafter called "the invention."

(License Range)

Article 2. The limitations placed on the license in the preceding article are as follows.

Term: Five years from (Month), (Day), (Year)
Specifics: Manufacture, sale, and use

(Registration)

Article 3. After patents rights on "the invention" have been registered and Party A has completed set procedures for obtaining an exclusive license, Party B may follow set procedures for obtaining an ordinary license pertaining to said patent rights at its own expense.

(Licensing Approval to Third Party)

Article 4. Party A may also license "this invention" to be licensed to a party other than Party B, hereinafter called the third party. Inventions, however, which are jointly owned by the AIST director-general and Party B shall require the prior consent of Party B except in cases where licensing approval has been granted to parties designated by the AIST director-general for reasons of public interest.

(Furnishing Technical Information)

Article 5. When Party B desires the technical information required to license "this invention", Party A shall provide such information in writing or by providing technical assistance through the AIST director-general.

(Related Inventions)

Article 6. [1.] When an employee belonging to Party B makes an invention on his/her own pertaining to "the invention" and decides to file for a patent on said invention, Party B must obtain the prior consent of the AIST director-general through Party A, and promptly provide Party A with a rough outline of that invention.

2. If an employee belonging to Party B and an employee belonging to AIST make an invention jointly pertaining to "the invention" and decides to file for a patent on said invention, Party B shall file for the patent jointly with the AIST director-general.

3. The administrative work involved in licensing the invention referred to in the preceding clause shall be done by Party A and Party B consulting with the AIST director-general.

4. Party B must comply with any memorandums, written confirmations, or written agreements that are exchanged with Party A and/or the AIST director-general concerning the treatment of said inventions related to "the invention" notwithstanding the provision in Item 2.

5. The provision in Item 4 apply to administration of conceptual ideas covered by the Utility Model Law and creations covered by the Design law.

(Royalties)

Article 7. [1.] After submitting the reports referred to in Article 8, Item 1, Party B must pay to Party A a royalty fee calculated according to the following formula for each government fiscal period during the agreement term.

(Example)

[$\times\%$ of product sales (unit price \times quantity sold) obtained by licensing "this invention"]

2. The payment referred to in the preceding clause which Party B must make includes a royalty fee and a reasonable consumption tax added to the royalty fee, hereinafter together called royalties.

3. If Party B does not pay the preceding royalties by a due date stipulated by Party A, Party B must a penalty to Party A calculated at an 8.25% annual interest rate on all unpaid amounts for each day starting from the day after the due date until the day payment is made.

4. If economic circumstances or other serious changes occur with either party, Party A and/or Party B shall hold talks with each other about changing the royalties referred to in Item 1 at the request of Party A or Party B.

5. If a settlement cannot be reached in the preceding talks, either Party A or Party B may request the agreement be annulled.

6. In the event, pertaining to "the invention", that a denial decision was made concerning the patent application, or the patent application was forfeited, or the patent application was declared invalid, Party B is not absolved from paying the royalties stipulated in Item 1 up to such time that the patent application was denied, forfeited, or declared invalid.

7. Party A shall not return licensing fees already paid under any circumstances.

(Reports)

Article 8. [1.] Party B must make out a quarterly report for each government fiscal quarter indicating production amounts, sales amounts, sales totals, or any other items stipulated by Party A pertaining to licensing of "the invention", and submit that report to Party A within 15 days after said quarter has ended.

2. If it is deemed necessary by Party A for achieving a better understanding of the implementation status of the invention, he/she may request more detailed reports from Party B regarding implementation or other related issues, or it may send its own staff members, or staff members designated by

the AIST director-general, to the work site of Party B to examine accounting ledgers or other such materials.

(License Transfers)

Article 9. [1.] Party B must notify Party A immediately in the event that the license referred to in Article 1 is transferred due to inheritance, merger, or any other such change in status. This also includes license transfers resulting from business transactions.

2. In addition to that which is set forth in the preceding clause, Party B must obtain prior consent from Party A when an action it plans to take will result in the transfer of the license pertaining to "the invention" referred to in Article 1.

(Patent Displays)

Article 10. Party B must make an effort to display the products, product containers, and/or packaging that result from licensing "the invention" in product-related catalogues.

(Safeguarding Rights)

Article 11. [1.] Party A shall make sure the agreement with the AIST director-general clearly states that the AIST director-general will fairly execute the patent application procedures pertaining to "this invention."

2. Party A shall promptly notify Party B when it has been notified by the AIST director-general that the patent range requested in the patent application for "this invention" have been reduced or otherwise changed.

3. In the event that Party A receives notification from the AIST director-general to the effect that a denial decision has been made concerning a patent application pertaining to "the invention", said Party A shall notify Party B to that effect and obtain the prior consent of B.

4. Party A shall notify Party B when it has been informed by the AIST director-general that the patent rights pertaining to "this invention" have been registered.

5. Party A must notify Party B when it has been informed by the AIST director-general that a patent application based on "this invention" has been declared invalid after it was registered.

6. Party A shall notify Party B and get his/her prior consent when it has been informed by the AIST director-general that detailed descriptions and corrected drawings are wanted for a review of patent rights pertaining to "this invention" after it was registered.

(Infringement)

Article 12. If said patent rights are violated after the patent application pertaining to "the invention" has been publicly disclosed, Party A, at the request of Party B, shall notify the AIST director-general immediately so that he/she may adopt measures to eliminate that problem.

(Third Party Infringement)

Article 13. If Party B infringes upon the rights of a third party by licensing "the invention", Party A and the AIST director-general shall be absolved of all liability regarding that infringement.

(Maintaining Secrecy)

Article 14. [1.] During and after the term of this agreement, Party B shall maintain secrecy and not divulge any technical information granted by Party A or the AIST director-general. This does not include information which is considered public knowledge.

2. The technical information obtained from Party B by audits or through knowledge gained from improvements to the invention (excludes items which are not secret) shall be considered secret and may not be divulged by Party A or the AIST director-general to a third party.

(No Contest Restrictions)

Article 15. Whether it be directly or indirectly, Party B is absolutely prohibited by Patent Law from objecting to patent applications and patent rights pertaining to "the invention", and also from contesting patent denial decisions, the rights of Party A and the AIST director-general, or applicants filing for patents pertaining to "the invention."

(Agreement Annulment)

Article 16. [1.] If any of the items below are applicable, Party A may request the agreement be annulled by giving written notification to Party B. In that case, the final day of the contract will be exactly one month after Party B has been notified of said annulment.

- (1) Party B is in violation of licensing specifics described in Article 2.
- (2) Party B does not pay the royalties stipulated in Article 7, Item 1 and 2, or Party B is noticeably late in paying said royalties.
- (3) Party B is substantially late in submitting the reports stipulated in Article 8, Item 1, or declines without good reason to undergo the auditing stipulated in Article 8, Item 2.
- (4) Party B fails to maintain secrecy as stipulated in Article 14, Item 1, or violates the "no contest" agreement stipulated in Article 15.
- (5) Party B provides false information or conducts other such unlawful behavior pertaining to the implementation of the agreement.
- (6) Party B fails to implement "the invention" without good reason, or demonstrates poor performance.

2. If any of the items below are applicable, Party B may request the agreement be annulled by giving written notification to Party A. In that event, the final day of the contract, if either (1) and (2) is applicable, will be one month after Party A has been notified of said annulment, and if either (3) through (6) is applicable, the final day will be the day in which Party A is notified of said annulment.

- (1) The AIST director-general does not judiciously carry out the patent application procedures stipulated in Article 11, Item 1, or does not adopt measures to eliminate patent infringement violations stipulated in Article 12, or Party A and the AIST director-general fail to maintain secrecy as called for in Article 14, Item 2.
- (2) Economic circumstances or other significant changes take place after the agreement goes into effect thereby eliminating any hope of earning a profit by licensing "this invention" despite reasonable efforts.
- (3) The patent range requested has been reduced, or other such significant change has occurred in connection with the patent application pertaining to "the invention."
- (4) Patent application pertaining to "the invention" has been forfeited.
- (5) Patent application pertaining to "the invention" has been rejected.
- (6) Patent application pertaining to "the invention" has been declared invalid.

3. In addition to that which is covered by Item 2 in the preceding clause, Party A or Party B may allow a period of more than 15 days for fulfilling contractual obligations in the event that said contractual obligations stipulated in said agreement are not fulfilled by either Party A or Party B. If the contractual obligations are not fulfilled by Party A or Party B within said time period, Party A or Party B may request the agreement be annulled. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

4. If either Party A or Party B is aware that something is untrue or patently false in concluding said agreement, Party A or Party B may request that the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract shall be the day that Party A or Party B is notified of the request to annul the agreement.

5. If the stipulation in Article 7, Item 5 is applicable, Party A or Party B may request the agreement be annulled by giving written notification to the other party. In that event, the final day of the contract will be the day upon which Party A or Party B is notified of the request to cancel the agreement.

6. In the event that one of the items from 1 to 4 is applicable, either Party A or Party B may request reparations if it is determined that either Party A or Party B has acted deliberately or negligently.

(Post-Agreement Obligations)

Article 17. [1.] In the event the contractual period stated in Article 2 has expired, or the agreement has been terminated for one of the preceding

reasons, Party B must pay royalties to Party A corresponding to lost royalties on production amounts pertaining to the licensing of "this invention." The method of payment shall be determined separately.

2. In the case noted in the preceding section, Party A and Party B shall have the rights and bear the obligations set forth in Article 7 and Article 8 within a range necessary to the enforcement of these royalty payment liabilities.

(Extending the Agreement Period)

Article 18. When Party B wants to extend the agreement term, it shall submit a written request to that effect to Party A six months prior to the end of said agreement.

(Matters Not Provided For)

Article 19. Matters not provided for in this contract shall be determined by consultation between Party A and Party B.

(Appendix)

Article 20. [1.] The details of the agreement are listed in the appendix.

2. If economic circumstances or other significant changes arise, Party A and Party B shall hold mutual talks at the request of either party with regard to changes in the appendix.

3. If the preceding talks are not held, the former appendix shall continue to be used.

Licensing Agreement on Joint Inventions Appendix (Sample)

1. The "manufacture, sales, and use" referred to in Article 2 of the Licensing Agreement for Joint Inventions, hereafter called the agreement, means "manufacture, sales, and use" in Japan, and if Party B plans the "manufacture, sale, or use" in a country other than Japan, it shall give prior notification to Party A, and do so under instruction from Party A.

2. The unit price in Article 7 of this agreement refers to the factory delivered price.

3. Party B may deduct a reasonable amount for his/her share from the licensing fee that Party B must pay to Party A in accordance with Article 7 of this agreement.

4. The reports mentioned in Article 8, Item 1 of this agreement shall be done on separate forms.

5. The "other changes" referred to in Article 9, Item 1 of the agreement include changes in address, company name, representatives, and location of licensed factory.

6. The "said displays of this invention" referred to in Article 10 of this agreement shall mean displays of "patents pending" up through registration of the patent rights pertaining to said invention, and after registration, it shall mean display of "patent number."

On Jointly Owned Inventions

After a joint application agreement has been concluded, a patent shall be applied for on inventions (concepts) originating from joint research, technical assistance, or other means where there should be joint ownership.

1-3 Matters Conducted During Licensing Agreement Term

Though there is not much to add to the aforementioned licensing agreements and licensing agreement appendices, we would like to alert parties to things they need to be aware of during the licensing agreement term.

1. The licensing agreement parties must submit three copies of an implementation report to the JITA within 15 days after the end of the fiscal quarter.
2. The payment of royalties shall be made on the due date stipulated (Article 7, Article 17 of licensing agreement) on JITA invoicing.

1-4 Other Items of Note

The license applications, licensing agreements, and licensing agreement appendices are all based on "patent" rights. Please substitute "patent" with "utility model" and "design" when working with utility model rights and design rights.

- (1) [patent right] → [utility model rights] or [design rights]
- (2) [patented invention] → [registered utility model] or [registered design]
- (3) [invention] → [concept] or [creation]

2. Royalties (Article 7 of licensing agreement) are calculated according to a "royalty calculation formula" issued by the Patent Office director-general. The average royalty for industrial property rights under AIST jurisdiction is 3.0%.

1-5 AIST Guidelines for Establishing Exclusive Licensing

47-10--382

5 February 1972

(Revised: 29 September 1976)

The establishment of exclusive and monopolistic licensing rights, hereinafter called exclusive licensing rights, regarding industrial property rights or rights to obtain industrial property, hereinafter called industrial property rights, under the management of the director-general of the Agency of Industrial Science and Technology, hereafter called AIST director-general, are set forth as follows:

(Objective)

Article 1. In order to promote greater use of industrial property rights, etc., the AIST director-general shall extend exclusive licensing rights, etc. on said industrial property rights, to each of the following groups.

- (1) Those public service corporations whose aim is to promote the distribution and use of government research findings, and who mediate relicensing of industrial property rights to parties outside Japan
- (2) Research Corp. of Japan (JRC)

(Establishment Procedures)

Article 2. The establishment of exclusive licensing rights, shall be done according to contract, and the request, therefore, shall be made directly to the AIST director-general concerning industrial property rights obtained by technical research and development based on commissioned development under the large-scale industrial technology R&D program or other such commissioned project. It can also be made directly to the AIST director-general via the AIST research laboratory concerned with said industrial property rights, as pertaining to other industrial property rights.

(Cancellation)

Article 3. In the event the party which has been granted exclusive licensing rights, hereinafter called the exclusive licensee, fails without good reason or any other reason, to distribute said industrial property rights, the AIST director-general may revoke the establishment of said exclusive licensing rights.

(Relicensing)

Article 4. The prior approval of the AIST director-general must be obtained if the exclusive licensee relicenses industrial property rights.

2. The exclusive licensee must relicense those parties specifically designated by the AIST director-general.

3. In the event an exclusive licensee relicenses another party, the royalties shall be calculated according to the royalty calculation method provided for in the Licensing Agreement for Government Patent Rights (February 27, 1950 Patent Law No. 58; revised on March 26, 1967 with Patent Law No. 333, and revised again on February 8, 1972 with Patent Law No. 88 at the direction of the Patent Office director-general).

(Payments for Exclusive Licensing Rights)

Article 5. The exclusive licensee must pay the AIST director-general 90% of the royalties it obtains from relicensing industrial property rights (rate is 80% if party being licensed is a foreign entity and licensing is for a foreign country).

2. Notwithstanding the preceding clause, the amount of payment which the Research Corp. of Japan makes to the AIST director-general for industrial property rights developed under commission by the Research Corp. of Japan for the purpose of implementing the same shall be calculated according to the royalty calculation method used in the Licensing Agreement for Government-Owned Patent Rights within a range no more than 50% of the licensing fee that the JRC obtains from relicensing to other parties.

3. The rate of payment stipulated in the preceding clause shall be reviewed every three years.

(Addendum)

These guideline are valid from the day of promulgation.

• Licensing Approval Method For Government Industrial Property Rights

(1) [AIST] → [JITA] → [Corporation]

Exclusive licensing rights → Ordinary license
(Monopolistic licensing rights) (Non-monopolistic license)

(2) [AIST] → [Research Corp. of Japan] → [Corporation]

Exclusive license → Ordinary License

Ordinary license with relicensing → Relicensing

- A list of government-owned patents is submitted once a year for the purpose of surveys, mediation, and consignment.
- Exclusive licenses are established as necessary for items developed under commission, and ordinary licenses, with exclusive licensing rights or relicensing rights, are established when implementing mediation.

2. Licensing Industrial Property Rights

Total Annual Revenue From Licensing Industrial Property Rights

| Year | License Fees (unit: yen) | Number of Claims | Total Number of Applicants |
|------|-----------------------------|------------------|-------------------------------|
| 1970 | 115,855,858 | 138 | 202 |
| 1971 | 183,025,262 | 138 | 216 |
| 1972 | 284,463,042 | 198 | 269 |
| 1973 | 286,635,214 | 208 | 304 |
| 1974 | 369,594,360 | 274 | 397 |
| 1975 | 468,920,764 | 403 | 695 |
| 1976 | 367,910,924 | 405 | 677 |
| 1977 | 252,126,882 | 384 | 636 |
| 1978 | 239,487,361 | 388 | 620 |
| 1979 | 205,296,730 | 468 | 635 |
| 1980 | 283,027,984 | 523 | 746 |
| 1981 | 233,906,312 | 559 | 826 |
| 1982 | 243,899,876 | 557 | 854 |
| 1983 | 239,404,138 | 590 | 882 |
| 1984 | 275,400,132 | 639 | 946 |
| 1985 | 307,988,162 | 681 | 933 |
| 1986 | 296,764,117 | 716 | 1,005 |
| 1987 | 291,134,740 | 748 | 991 |
| 1988 | 324,383,968 | 758 | 1,002 |
| 1989 | 329,219,742 | 661 | 824 |
| 1990 | 185,793,166 | 624 | 783 |
| 1991 | 198,670,437 | 622 | 790 |

Licensing Status (31 March 1991)

| Research labs | Domestic industrial property rights | | | | | | | | | | | | Overseas | | | Total | |
|--|-------------------------------------|-------|--------|----------------|--------|-------|---------|-------|--------|-------|--------|-------|----------|--------|-------|--------|-------|
| | Patents | | | Utility models | | | Designs | | | Total | | | Firms | Rights | Firms | Rights | Firms |
| | Rights | Firms | Rights | Firms | Rights | Firms | Rights | Firms | Rights | Firms | Rights | Firms | | | | | |
| National Research Laboratory of Metrology | 4 | 6 | 1 | 1 | 0 | 0 | 5 | 7 | 0 | 0 | 0 | 0 | 5 | 7 | | | |
| Mechanical Engineering Laboratory | 41 | 41 | 0 | 0 | 0 | 0 | 41 | 41 | 0 | 0 | 0 | 0 | 41 | 41 | | | |
| National Chemical Laboratory for Industry | 46 | 63 | 3 | 3 | 0 | 0 | 49 | 66 | 0 | 0 | 0 | 0 | 49 | 66 | | | |
| GIRI, Osaka | 62 | 79 | 0 | 0 | 0 | 0 | 62 | 79 | 0 | 0 | 0 | 0 | 62 | 79 | | | |
| GIRI, Nagoya | 12 | 13 | 0 | 0 | 0 | 0 | 12 | 13 | 0 | 0 | 0 | 0 | 12 | 13 | | | |
| Fermentation Research Institute | 33 | 77 | 0 | 0 | 0 | 0 | 33 | 77 | 6 | 6 | 6 | 6 | 39 | 83 | | | |
| Research Institute for Polymers & Textiles | 50 | 73 | 2 | 2 | 0 | 0 | 52 | 75 | 3 | 9 | 5 | 5 | 55 | 84 | | | |
| Geological Survey of Japan | 4 | 4 | 3 | 4 | 0 | 0 | 7 | 8 | 0 | 0 | 0 | 0 | 7 | 8 | | | |
| Electrotechnical Laboratory | 36 | 41 | 8 | 8 | 0 | 0 | 44 | 49 | 0 | 0 | 0 | 0 | 44 | 49 | | | |
| Industrial Products Research Institute | 16 | 16 | 1 | 1 | 0 | 0 | 17 | 17 | 2 | 2 | 2 | 2 | 19 | 24 | | | |
| MRI for Environment and Resources | 30 | 30 | 1 | 1 | 0 | 0 | 31 | 31 | 0 | 0 | 0 | 0 | 31 | 31 | | | |
| GIDL, Hokkaido | 4 | 4 | 1 | 1 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 5 | 5 | | | |
| GIRI, Kyushu | 25 | 26 | 1 | 1 | 0 | 0 | 26 | 27 | 0 | 0 | 0 | 0 | 26 | 27 | | | |
| GIRI, Shikoku | 15 | 15 | 1 | 1 | 0 | 0 | 16 | 16 | 0 | 0 | 0 | 0 | 16 | 16 | | | |
| GIRI, Tohoku | 4 | 8 | 0 | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 0 | 0 | 4 | 8 | | | |
| GIRI, Chugoku | 1 | 1 | 3 | 3 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 4 | | | |
| Subtotal | 383 | 497 | 25 | 26 | 0 | 0 | 408 | 523 | 11 | 22 | 419 | 545 | | | | | |
| Large-scale project | 64 | 89 | 10 | 16 | 0 | 0 | 74 | 105 | 6 | 6 | 80 | 111 | | | | | |
| Sunshine Project | 21 | 21 | 0 | 0 | 0 | 0 | 21 | 21 | 0 | 0 | 21 | 21 | | | | | |
| Moonlight Project | 21 | 21 | 1 | 1 | 0 | 0 | 22 | 22 | 0 | 0 | 22 | 22 | | | | | |
| Next-generation project | 11 | 13 | 0 | 0 | 0 | 0 | 11 | 13 | 0 | 0 | 11 | 13 | | | | | |
| Medical and welfare equipment program | 66 | 75 | 3 | 3 | 0 | 0 | 69 | 78 | 0 | 0 | 69 | 78 | | | | | |
| Total | 566 | 716 | 39 | 46 | 0 | 0 | 605 | 762 | 17 | 28 | 622 | 790 | | | | | |

(Note: Number includes applications pending; FIRMS: applicants)

- END -

**END OF
FICHE**

DATE FILMED

14 APRIL 1993